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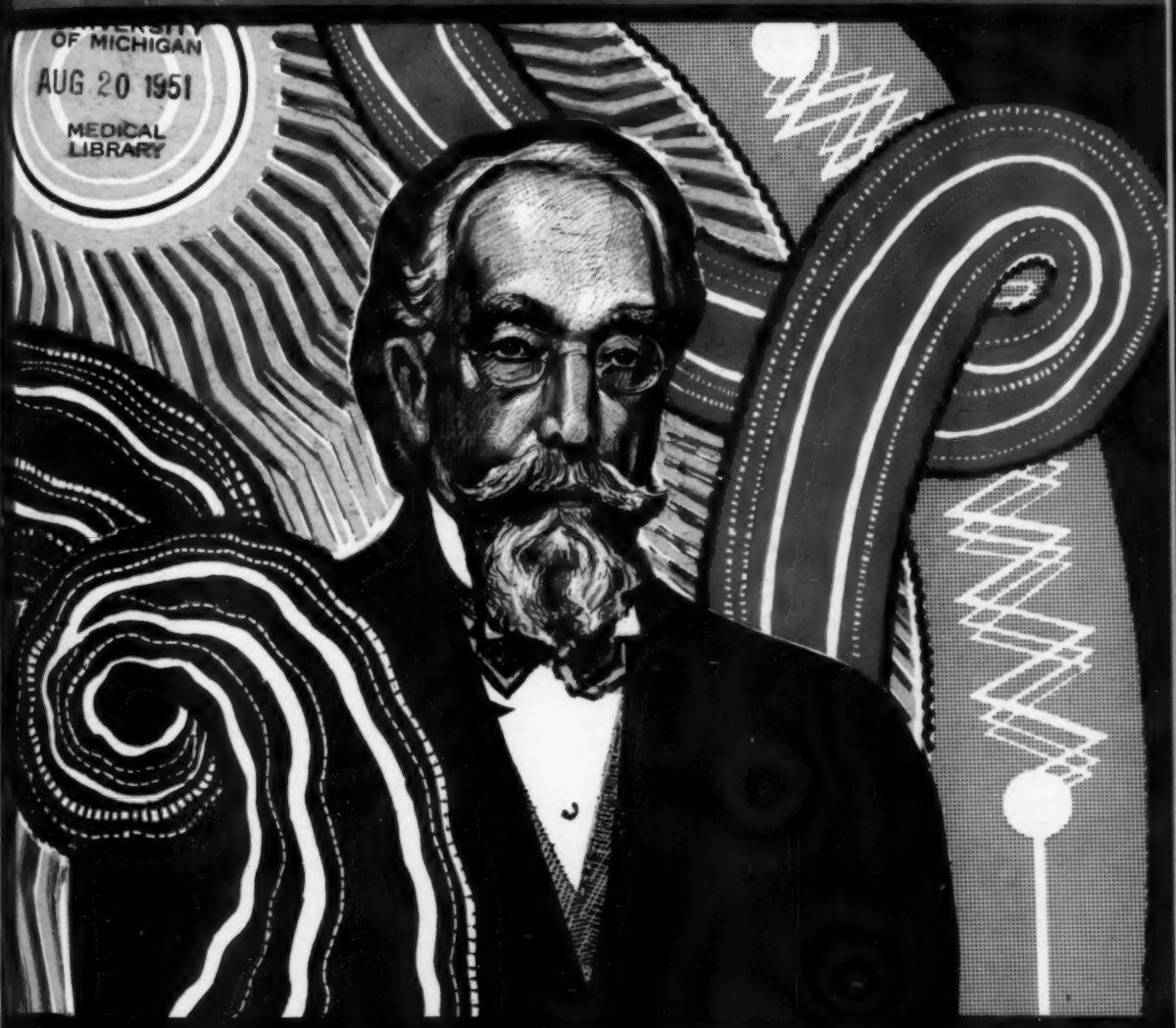

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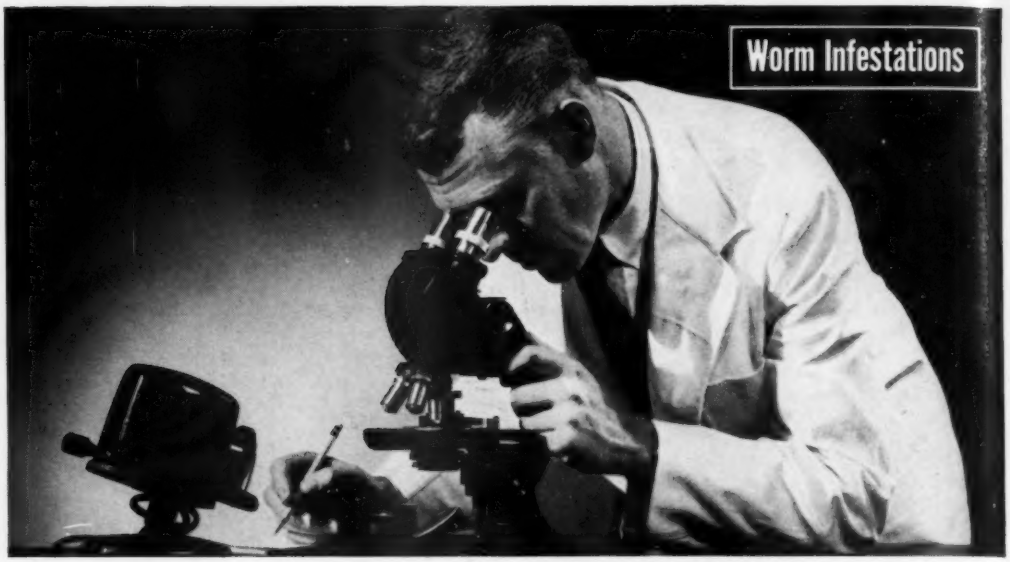

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Bibliography

1. Paul, W. D.; Daum, K., and Kemp, C. R.: J. Iowa M. Soc. *37*:146, 1947.
2. Schaefer, A. E.; Salmon, W. D., and Strength, D. R.: Proc. Soc. Exper. Biol. & Med. *71*:202, 1949.
3. Schaefer, A. E.; Salmon, W. D., and Strength, D. R.: Proc. Soc. Exper. Biol. & Med. *71*:193, 1949.
4. Welch, A. P., and others: Federation Proc. *9*:245, 1950.
5. Stokstad, E. L. R.: Federation Proc. *9*:235, 1950.
6. Morrison, L. M.: J. A. M. A. *145*:1232 (Apr. 21) 1951.
7. Handler, P.: J. Biol. Chem. *162*:77, 1946.
8. Pomeranze, J., and Levine, B.: Rev. Gastroenterol. *16*:771, 1949.
9. Pelner, L.; Davidson, B.; Waldman, S., and Margolis, R.: New York State J. Med. *48*:523 (Mar. 1) 1948.
10. Leevy, C. M.; Ryan, C. M., and Fineberg, J. C.: Am. J. Med. *8*:390, 1950.
11. Beck, K.: Paper to be published.

Leaves from a Doctor's Diary

By Maurice Chideckel

July 1 . . . It is of love that I am thinking. Love. For unnumbered generations they sang of love, of its beauties, and of the tragedies of its frustration. From the dawn of history it captivated the imagination of the sturdy, the brutal, the brilliant, the capricious and the cryptic. It brought and brings unutterable happiness, and also death and destruction. Wars raged, whole cities were laid waste because of the love of a man for a woman. Man has killed the object of his adoration so no one else could have her. "Love," wrote Congreve, "is like death, a universal leveller of mankind." And Ernest Lang: "Love like beauty, strong to lure; love like joy, makes her thrall, strong to please and conquer all." What's the thing they call love, that also produces explosive bitterness and unmitigated hatred? Men and women, brilliant men and women, have lost their minds because of jealousy or because of disappointment in love. Aberrations or reasoning under the impact of emotional complexes because of love need hardly be dwelt upon.

Lives are being sacrificed daily because of a man's love for a woman and vice versa. The poetry alone of love, if spread out, would encircle the globe several times. The pitfalls that lurk in love, their reflections mirrored in the lives of men and women would cover the earth. What is it? Yes, what's the definition of the thing we call love? Wherein are hidden its beauties and its cruelties? "True love, like the eye, can bear no flaw," sang Lavatar, and any flaw is dangerous.

Here was Helen Beatrice Yalden. Never, never did she wantonly violate decency and respectability in word or deportment. Cultured and of supreme beauty, she was adored, loved and proposed to countless times. One day she came with Thomas Whittier, a man of wealth and education and of imposing appearance. "This is the man I love," she whispered in my ear. "As soon as he proposes I will marry him." "Happiness," she quoted Henry Grove, "like a refreshing stream, flows from heart to heart in endless circulation." And suddenly—. One day he revealed to her that he was married, that he does love his wife, and that she is returning from Europe within a few days. Helen came to my office four weeks ago, quoted the lines from Racine: "My innocence at last begins to burden me." She ran out.

After that she let go. She sought escape in liquor and also in indiscriminate sexual indulgence. Her moral stamina lowered to that of a courtesan. Yesterday she appeared to me a drunken repulsive female; her vulgarity was nauseating. Between hiccoughs she told me that she drank to the health of a friend, but that the friend was so sickly looking that she thought one drink to his health was not enough. She pushed my hand away when I was about to administer paraldehyde, my sedative of choice in cases of alcoholism. To accelerate oxidation of the blood I obtained a tank of oxygen (at my expense). As I was about to administer oxygen by mask she threw the mask in my face. Then she ran into the next room dragging two bottles of liquor with her and closed the door. And today?

Well, today was the first fatal case of alcohol toxicity in my practice.

How ineffably beautiful she looked in death.

Wolf Lodge was an exacting executive, of sound judgment, and a man of accepted stature. A patient of mine, he would cringe at the memories of his youth, for the woman he loved left him for another man. One day he visited his sick sister at the hospital, and in the room he espied *her*—her fine head resting upon the shoulder of her husband. That day spelled his doom. Psychosomatic effects were never so clearly demonstrated. His disabling mental disorders brought distressing results. Essential hypertension was ushered in with dramatic suddenness. The alterations in the cerebral vascular mechanism were striking. The weakness and fatigue, the dizziness and the tinnitus plagued him constantly. His memory is defective, but he does not forget her. His pressure is rising and he'll most likely succumb to cerebral hemorrhage.

Here is Blanche Huneker, sweet and charming, who loves her liquor-loving, foul-smelling husband with pathologic intensity.

Chemist Judson returned from his honeymoon with short, wide, ugly and illiterate Catherine. Her nose makes Jimmy Durante's a mere pimple. "I see in her what you don't," he explained to me. What, for instance?

John Paulding has a persistent reputation as a rake. He is short, obese, and repulsively ugly.

"Why?" I asked Lillian Hunt, attractive and cultured, "do you wish to marry him?" "Because I love him," she explained. "There is not another one like him." To this I fully agree.

(Continued on page A-14)

Anxiety and Autonomic Lability as the Basis of Functional Disorders

Emotional response to the stress of life is the primary source of illness in a steadily increasing number of cases. *Weiss* and *English*[1] estimate that as high as two-thirds of all patients have disorders due either entirely or in part to emotional factors and anxiety. *Ebaugh*[2] refers to anxiety as ". . . the universal disease of our times".

Complete examination discloses no organic basis for the symptoms in these cases, yet the clinical picture may mimic a true organic disease.

The symptom-complex usually involves several organ systems.[2,3,4] In such cases, the anxiety is channeled into organ dysfunction via the autonomic nervous system.[2,3,5,6] Some of the effects produced by exaggerated activity of a labile autonomic system are tabulated below. Many of these, it will be noted, are related to the symptoms which feature prominently in functional disorders. The symptoms in any one case are not necessarily limited to one organ system. Usually some are referable to sympathetic hypertonicity, others to parasympathetic hypertonicity.

ORGAN SYSTEM	SYMPATHETIC HYPER-TONICITY	PARASYM-PATHETIC HYPER-TONICITY	SYMPTOMS OF FUNCTIONAL DISORDER	AUTONOMIC LABILITY
GASTRO-INTESTINAL	Hypomotility Hyposecretion Intestinal Atony	Increased Salivation Hypermotility Hypersecretion	Belching Heartburn Nausea & vomiting Mucous diarrhea	When a patient exhibits a clinical picture suggestive of non-organic dysfunction, the diagnosis of Functional Disorder can be facilitated by use of the following indications of Autonomic Lability: Variable Blood Pressure Temperature Variations Changing Pulse Rate Deviations in B.M.R. Exaggerated Cold Pressure Reflex Oculo-cardiac Reflex Abnormalities Glucose Tolerance Alterations
CARDIO-VASCULAR	Rapid heart rate Peripheral vaso-constriction Slight rise in blood pressure	Reduced heart rate Vasodilatation Lowered blood pressure	Palpitation Sinus tachycardia Premature systoles B.P. low in some; elevated in others	
RESPIRATORY	Dry nasopharyngeal mucous membrane Bronchial relaxation	Increased nasopharyngeal secretion Bronchial constriction Laryngospasm	Dry mouth and throat Difficulty in breathing Sighing respiration	
GENITO-URINARY	Bladder detrusor relaxed; Sphincter contracted Ureter tone and motility decreased	Bladder detrusor contracted; Sphincter relaxed Ureter tone and motility increased	Urinary frequency Difficulty in urinating Dysmenorrhea Menstrual irregularity	

This tabulation is based on data available in references 1 to 6 stated below.

Primarily, the patient visits his physician out of concern over his symptoms. At this point, he is either unaware of his basic emotional problem or ignores it. A complete examination will rule out organic disease and thus reassure the patient. Then, treatment is directed along two lines: First, relieve the patient of subjective distress by drug therapy.* He will then be more cooperative in discussing his emotional problems. Then, having uncovered the basic problem, guidance is given toward correcting unhealthy situations and attitudes.

*The fact that autonomic dysfunction plays a large part in mediating the disturbance suggests autonomic sedation. A number of independent studies indicate that this therapeutic approach is effective.[7,8,9] The investigators used ergotamine tartrate (adrenergic blockade), levo-alkaloids of belladonna (cholinergic blockade) and phenobarbital (central sedation) in the form of **Bellergal** tablets. The total effect is an integrated sedation of the entire A.N.S.

1. WEISS, E., and ENGLISH, O.: Psychosomatic Medicine, ed. 2, Saunders Co., 1949. 2. EBAUGH, F. G.: Postgrad. Med. *4:* 208, 1948. 3. WILLIAMS, E. Y. et al: J. Nat. M. A. *42:* 32, 1950. 4. WOOLEY, L.: South. Med. & Surg. *102:* 157, 1940. 5. KATZ, L. N., et al: Ann. Int. Med. *27:* 261, 1947. 6. KROGER, W. S. et al: Am. J. Obst. & Gynec. *59:* 328, 1950. 7. KARNOSH, L. J., and ZUCKER, E. M.: A Handbook Of Psychiatry, Mosby Co., 1945. 8. HARRIS, L. J.: Canad. M. A. J. *58:* 251, 1948. 9. SLAGLE, G. W.: J. Michigan M. Soc. *41:* 119, 1942.

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Once love has been defined as "the contact of two bodies." The contact certainly brings results. But what is love?

Why does Joan love William who is ready to die for Helen and who in turn is crushed because of her infatuation for Robert? Why do men make sacrifices for worthless women; why will women of beauty and culture marry men of no redeeming feature? Why does a woman, abused and mistreated by her husband, cling to him? No answer.

• • •

July 2 . . . Disoriented, belligerent and hyperactive, Alfonso Grimso was brought to my office by his wife and very unattractive daughter. He was in reality a combination of the ingratiating and exasperating, alternately weeping and laughing, silent and aloof or incessantly talkative. Shock treatment brought gratifying results. Casually I asked his wife what her daughter was doing. Answer: "She is a 'maybe' sitter. You see. She sits alongside a young man every night for hours at a time. Who knows? May be."

• • •

July 3 . . . In the country to cure a brother and sister. The brother has diastolic arterial hypertension; the sister is afflicted with a chronic vascular headache on which CAFERGONE and synergen exerted no beneficial results. I was to name the sum for curing them. I must also specify the time it will take to achieve the results. After that if they stay cured for at least a year I was to receive the amount requested. Not one cent before that. It was late at night. The battery of my car went dead and I was forced to spend the night in the rickety hotel. I asked the greasy clerk to wake me at 6 A.M. "And who, please, is going to wake me?" he asked. "I'll tell you what. You see the button near the window. Just press it at 6; that'll wake me up. Then I'll come up and put you on your feet." I didn't have to press the button. The bedbugs insisted that I shouldn't sleep, and they won.

July 4 . . . The day he left the hospital where he underwent a lumbar sympathectomy for thromboangiitis obliterans, Marvin Davis committed another robbery. Most of his life he had spent behind bars. This time the judge in criminal court sentenced him to 100 years. Marvin is 68, and His Honor consoled him. "You need not serve the full hundred. Just stay as long as you live. After that you'll go where you belong."

• • •

July 5 . . . Happiness eluded Rose Carrol and her dull witted lover. Her husband was in the hospital presumably dying of osteomyelitis of the skull with spidural abscess. "This is my next husband," she introduced the peculiar looking creature to me. "You understand my husband will soon be stretched out, and he hasn't any insurance." "But he," pointing to the new venture, "makes plenty of money."

But bacitracin cleared up her husband's case, and he was discharged from the hospital. "Damn these hospitals," she said weepingly and wrung her hands in despair.

• • •

July 8 . . . One time Dr. Wright was wrong. Usually there is no hiatus between his recognizing embolism and its actual incidence. But not this time. For unexplained reasons he insisted that the post-

operative case was complicated by thromboembolism, and if DICUMAROL were not given, the patient would die. The prothrombin time of that particular patient made the administration of dicumarol unsafe. He was watched carefully. "Postmortem will prove me right," the doctor said. That was two weeks ago. Today he came to ask whether necropsy had proved him right or wrong. "Ask him," the surgical intern answered, pointing to the patient in the corner—who had come for a check-up.

• • •

July 13 . . . Diagnosis: Cortical hyperostosis in an infant of 8 months due to vitamin A poisoning. The 16 year old mother fed her baby oleum percomorpheum in teaspoonful doses. The mother-in-law screamed aloud: "From now on I'll take care of the baby. If you try to stop me I'll disinherit your husband and you, yes, I'll make a different will before I go." A remark by the mother, a child herself, threw a revealing light on her love for her mother-in-law. "I'm not afraid that she'll disinherit us before she goes. I fear most that she may not go."

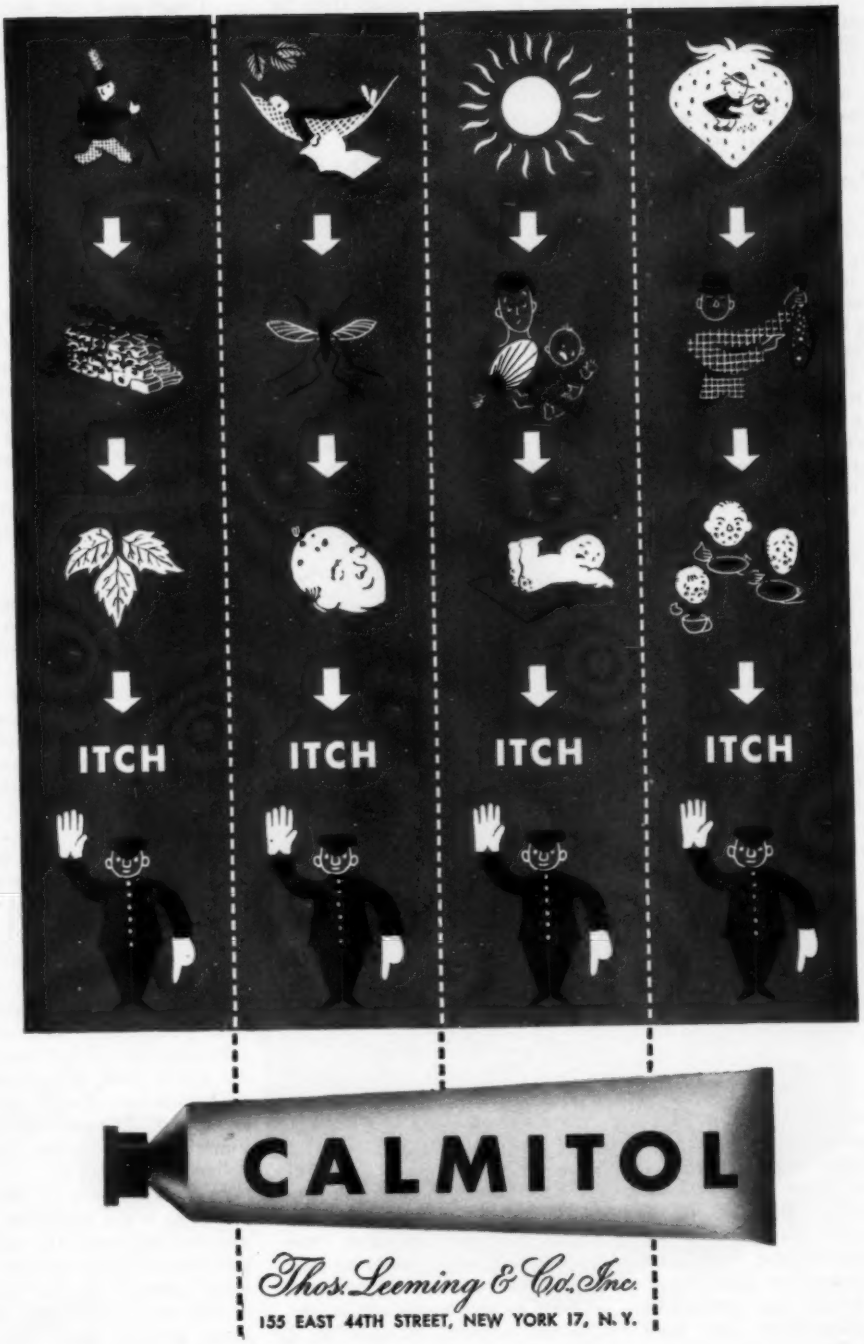
Case of acute hepatitis in a man, febrile and with high psychomotor agitation. My order to send him to the hospital was disobeyed. Instead he was taken to a neuropath. Fifty dollars for curing him. First payment was 10 dollars. The genius will not receive another cent, because further treatment is not needed.

I treated philosophical Janson for colitis. As it was difficult for him to reach for his wallet, I paid for the CHLOROMYCETIN. "I promised to come today about your bill. I am a man of my word. Here I am to tell you that you'll have to forget the bill. I am broke. I am broke and unhappy. The thought that youth is behind me—I am 30—is unbearable. Thanks. Goodbye. So I owe you nothing."

• • •

July 17 . . . Where else can you see the complexities and contradictions of humanity as one does in the clinic? In the clinic as in no other place you witness human passions and frustrations, valor

(Continued on page A-16)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and also treachery and infidelity. Al Coleman, for example. Evidently dihydrostreptomycin did not cure his gonorrhea, contracted while he was on the road. "That's all the pleasure I have when away from home," he spoke with a serious mien. His pretty wife came today with a specific urethritis. Foolishly the intern in urology asked how her husband was getting along. "So," she mused. "I'll step out too." She did. Her first victim was one named Walter who once gave her up for another woman, but claimed that he still loved her. He is in bed with bilateral orchitis while his wife is being treated at the clinic with penicillin. I saw the two women whispering to each other in the dispensary. I wonder what the subject of conversation was.

• • •

July 18 . . . Near the psychiatric clinic stood widow Gordon and Howard Been, a bachelor. The widow's little daughter is being treated with BENZEDRINE orally for behavior disorders. The rain came down in torrents. Been, under his umbrella, embraced the widow and pressed her to his bony body. "Oh, darling," I heard him speak aloud to drown the noise of the rain, "I could stay like this all my life, forever and ever." Her wet face was lifted up to him. "Me too," she said, "if only your umbrella were not leaking." He became incurably romantic. With the gallantry of a warrior he pressed her tighter and tighter. "Marry me," he pleaded, "and I shall buy a new, a brand new umbrella."

• • •

July 20 . . . No, this story is no tense drama, not a story of a hero in bright armor nor a tale of lurid people. It is just an incident shaped and molded by the gossip of busybodies. Thelma Brown, a strikingly attractive young woman of great accomplishment, was secretary to a prominent pious executive. She herself was profoundly religious. Unmarried, she lived with and supported her widowed mother. One night she suddenly began to bleed profusely from the vagina, and the doctor in the neighborhood was hastily summoned. He woke up the next door neighbor, who had a telephone, and called the hospital. He had an emergency case, an ectopic.

In the morning at least a dozen women called to ask what an ectopic is. The best definition I could give was "pregnancy outside the womb." "What!" screamed one. "Thelma Brown is pregnant?" The news traveled fast and furiously. The man for whom she worked informed her mother he does not want to see Thelma any longer. I followed Thelma's case minutely. It was not ectopic. The girl was innocence incarnate. She

suffered from acute intestinal obstruction. In the pelvis when she was opened were found loops of infarcted gut. There was torsion of the entire small intestine—an unusual case. I informed her employer that his secretary was wrongly and outrageously accused of a moral crime she did not commit. He looked searchingly at me. "No one is here," he spoke in a subdued voice. "Trust and tell me. Are you responsible?

Two women were standing near Thelma's door and spoke. Said one: "I knew all along there was something between her and that doctor with the funny name." Yesterday Thelma came home, weak and pale. The boys jeered her, one boy called aloud to ask where the bastard was. Another one wanted to know the name of the "brat" and the sex. Mother and daughter will leave town. No comment.

• • •

July 21 . . . I would like to fashion a method, a new method for psychologic analysis to analyze Tightwad with his uncontrollable craving for afflictions that are rare. Like a blind and narrow fanatic he is ready to risk his life in order to witness the unusual. I found him running about in his library, striking the air with his fists and cursing this country. "The U.S. has nothing. Look. Two wonderful cases. A case of hemiplegia due to thrombosis of the carotid artery—an unheard of trouble—and the Gillian-Barre syndrome, a gradual onset of flaccid paralysis and abolition of reflexes with no involvement of the pyramidal tract. And where are these two great wonders? Where? In this country? Hell, no. In South Africa." And he began to run from one end of the room to the other like a madman.

• • •

July 25 . . . Mrs. Fowler is suing laryngologist B. for 10 thousand dollars. Her little girl developed poliomyelitis soon after tonsillectomy. I told her lawyer that the report from Los Angeles has no significance. Confidentially he whispered, "I know it. But Mrs. Fowler can use a few thousand dollars, and so can I."

In the dispensary sat Mrs. Cole. She came to get something for her diarrhea following the taking of aureomycin. "How old are you?" asked grouchy Dr. L. "I am 41, so help me." "You don't have to swear to your age," the doctor grumbled. "I don't suspect you of being any younger."

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Reports *from abroad*

from POSTGRADUATE MEDICINE'S
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GENEVA, SWITZERLAND

Use of cortisone in ophthalmology—Studies with cortisone and ACTH have from the first aroused great interest in Switzerland, for it was here that Compound F was discovered by Professor Reichstein who, with Dr. Hench and Professor Kendall, received the Nobel Prize in 1950.

At the same time that Professor Bickel, chief of the therapeutic clinic at the University of Geneva, and his associate, Dr. R. Mach, were occupied with the clinical application of ACTH and cortisone, one of the foremost ophthalmologists of Europe, Professor Franceschetti, was studying the effects to be obtained in ophthalmology from the local administration of cortisone. Therapeutic application of this sort may be made in three ways: (1) by collyrium, (2) by ointment, or (3) by subconjunctival injection. Franceschetti has been using two concentrations, one of 1 per cent and the other of 2.5 per cent; both are well tolerated and practically free of untoward side effects. The instillations are usually made at the rate of one drop every two or three hours. An ointment with a 1 per cent concentration is available for prolonged treatment; this also is exceedingly well tolerated and satisfactory as to results.

From October 1950 until January 1951, Franceschetti treated 24 patients for various ocular diseases. The results indicate that the application of cortisone in inflammatory conditions of all kinds affecting the anterior segment of the eye is highly favorable. Attention is directed in particular to the dramatic response obtained in an early case of parenchymatous keratitis (congenital syphilis), which seems all the more remarkable as American clinicians have not observed real improvement after parenteral administration. The quick response to the local application of cortisone in cases of keratitis profunda is of the utmost significance, because these diseases ordinarily are resistant to conventional therapy and present an unfavorable prognosis.

Greatly impressed by the effect exerted by cortisone on vascular neoformation, Franceschetti applied this hormone locally in certain cases of corneal transplants with a tendency to vascular invasion. Arrest of the vascularization of transplanted corneal tissue was effected by the instillation of cortisone in two cases.

It should also be noted that the use of cortisone in ointment form eliminates allergic reactions even in some patients who are intolerant to all drug therapy. When it is recalled how frequently ocular reactions are incurred with certain drugs (atropine, mercurials, NUPERCAINE®), one may even now envision the great benefit that may be obtained from the cortisone-plus-drug combination.

Among the ocular diseases attributable to allergy, vernal conjunctivitis seems to respond well to the local application of cortisone.

Congress of medical and surgical films—This congress was assembled upon the initiative of Professor Jentzer, director of the surgical clinic of Geneva, and Drs. Weber-Bauler and Rentchnick, editors of *Médecine et Hygiène,* with the collaboration of E. Duvivier, director of the International Center for Medical and Surgical Motion Picture Films. The congress set aside one week for its sessions, when medical films were shown in the Swiss university centers of Basel, Berne, Zürich, Lausanne and Geneva.

Nations whose films were shown included: France, the United States, Germany, the U.S.S.R., Great Britain and Switzerland. Several thousand Swiss physicians viewed the films. The French films stood out above all others, because they were the handiwork of a group of professional photographers who work in close collaboration with the best surgeons of Paris, Lyon and Strassburg. By making use of the technic of large-scale close-up views, their films succeeded in giving the illusion that one was witnessing the actual operation, for the minutest surgical details were brought out in bold relief.

This new kind of congress, devoted to the showing of motion picture films, was tremendously successful; it is a highly effective addition to the existing means of disseminating medical information. It is planned to organize such presentations annually in the university centers of Switzerland.

A great medical historian—The name of Pro-

(Continued on page A-36)

join hands:

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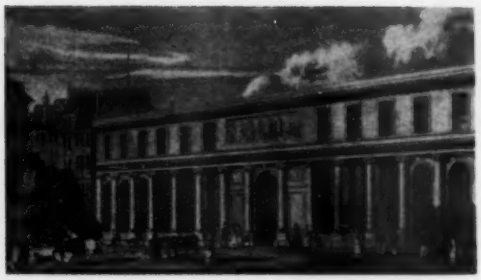

L'Ecole de Medecine of Paris at the beginning of the nineteenth century.

fessor Henry Sigerist, whose sixtieth birthday was recently celebrated, must undoubtedly be included in the list of the great medical historians of all time. He was born in Paris on April 7, 1891, and studied medicine in Zürich and Munich; he received his medical degree in Zürich in 1917. He thereupon devoted himself to the study of the history of medicine, and has been teaching this subject since 1921.

In 1925, he was called to the University of Leipzig as successor to Dr. Sudhoff, and in 1932, he accepted a call from Johns Hopkins University where he succeeded Professor W. H. Welch.

In his capacity as professor and director of the Institute of Medical History at Johns Hopkins, Sigerist instructed several generations of medical students in the historical background of their profession. Professor Sigerist is the author of numerous publications; he also is founder of *The Bulletin of the History of Medicine* (Baltimore), and co-founder, with G. A. Wehrli, of the *Zürcher medizingeschichtliche Abhandlungen*. His profound study of medical history naturally led to his interest in the sociologic aspects of medicine.

Sigerist has left Baltimore and has been living for some years in the village of Pura, in the Italian language section of Switzerland. Here he is busily pursuing the task of preparing his great eight-volume edition of the history of medicine, the first volume of which has recently been published.

PARIS, FRANCE

French conceptions of syphilography—French syphilographers have as their aim the rapid cure of the majority of syphilitics, but they seek also to bring about a permanent cure in every instance. They condemn as unacceptable all cases which, some months after termination of treatment, still show positive serologic reactions. The great majority of French syphilologists continue to believe in the necessity for repeated treatments, extending over a year or two.

The typical case is that of early syphilis attributable to recent exposure, but already showing a positive serologic reaction. Cases of this type are treated with penicillin in variable dosage, amounting usually to 300,000 units, which are administered morning and night for 10 days, to a total of 6 million units. Bismuth therapy is instituted at the same time. The simultaneous administration of penicillin and bismuth has been practiced for two years, and has been done all the more readily because penicillin brings about a high bismuth tolerance without resulting stomatitis. Up to 4 or 5 injections of 0.07 gm. of bismuth a week have thus been made. However, it has been noticed by Degos that the elimination of bismuth is enhanced by penicillin, and that therefore the former's effectiveness is correspondingly diminished. At present, bismuth injections are not started until the penicillin therapy has been terminated.

Administration of bismuth consists of giving a series of 12 to 15 injections of the oil-soluble preparation in the amount of 0.07 gm. at the rate of 2 injections per week. This series of injections is repeated during the first year with intervening rest periods of from two to four weeks, and of several months duration during the second year of treatment. Persistence of positive serologic reactions after the second series of bismuth injections has been administered is wholly exceptional.

The patients are followed for several years, even if they have been under active treatment for three years. Serologic examinations are multiplied. A lumbar or suboccipital puncture is made either during the course of treatment or immediately after its termination. After that, the patient is kept under surveillance for one year, and the Social Service usually is successful in keeping a check on him in the years following.

A variant treatment includes the Bolgert method of intensive penicillin administration, that is, the giving of 15 million units in 15 days, and termination of all treatment at that point. The number of cases so treated is as yet insufficient to permit an evaluation.

In rare cases in which penicillin proves ineffective, some practitioners have recourse to arsphenamine, and others rely on bismuth.

STATISTICS

A frightful recrudescence of syphilis occurred in France after the war. Presently, the spread of new infections is back to what it was in 1939, which is about one-third the rate of the years 1944 to 1946 when the epidemic reached its maximum severity.

The results obtained by the French method of treatment are attested by the statistics compiled by Degos, as follows: Among the 1,340 patients who

(Continued on page A-38)

3 out of 4 patients will catch

Athlete's Foot

this summer

and it's less work than guess-work to let OCTOFEN clear those cases as quickly and safely as possible . . . as thousands of doctors have discovered!

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The Royal Abbey of Val de Grâce, built in 1665, now the School and Museum of Hygiene and Military Sanitation.

have been re-examined after a lapse of several years since termination of treatment, 1,331 have remained completely symptom-free; three patients temporarily showed positive serologic reactions, and only two patients revealed unmistakable signs of clinically demonstrable syphilis. One patient showed a marked deviation in his cerebrospinal fluid from normal.

Treatment of old cases of syphilis is generally initiated with penicillin followed by repeated courses of treatment, over the years, with bismuth. Syphilitic patients with aortic and ocular involvement are treated for several years by prolonged series of injections of mercuric cyanide—some 100 to 150 injections a year.

HEAT THERAPY

Pyretotherapy is almost exclusively reserved for patients with syphilitic manifestations of the central nervous system—especially patients with generalized paresis—and is applied in combination with the administration of penicillin and pentavalent arsenic. Malaria therapy is the only form of treatment usually applied.

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1... relaxation of smooth muscle spasm especially of the genito-urinary and gastro-intestinal tracts . . . . . 2... in migraine and related headaches.

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Surgical Evaluation and Management of the Cardiac Patient

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The roles are discussed which must be played by the internist, the anesthesiologist and the surgeon in the evaluation and management of the cardiac patient undergoing surgery. The importance of teamwork is stressed, and the various factors influencing the success of the operative procedures are enumerated in detail.

SURGERY is frequently necessary for a patient with cardiac disease. In the great majority of instances the operative procedure is well tolerated and the patient has an uneventful postoperative course. However, not infrequently the cardiac patient is mismanaged. The purpose of this paper is to discuss the evaluation of such an individual and to outline his proper management. This will include diagnosis, anesthesiologic and surgical care and suggested postoperative routines.

The importance of teamwork, associating the closely allied activities of internist, anesthesiologist and surgeon, is most strongly emphasized when dealing with the cardiac patient. Failure on the part of any member of this team may result in disaster. Each has his own individual functions to perform, but unless cooperation is practiced a poor prognosis may be expected. Each must work hand-in-hand with the other, giving freely of his sincere advice and judgment. Then, when the patient comes to surgery, this combination will afford him the best prognosis.

In general, the greater the degree of heart disease the greater is the danger. Brams[1] illustrated very concisely several important principles to be estimated carefully when considering such a patient for surgery: (1) type of cardiac involvement; (2) presence or absence of congestive heart failure; (3) probable extent and duration of the operation; (4) urgency of surgery, and (5) purpose of surgery—to improve the patient's health or merely to increase his comfort.

Excitement, worry and discomfort, effect of anesthetics on the heart and circulation, peripheral circulatory collapse with the marked alteration in the hemodynamics resulting therefrom, postoperative pain, poor response to infection and tendency to pulmonary embolism and infarction are all factors which increase the morbidity and mortality of cardiac patients (Blalock and Ravitch,[2] Ellis[3]). All of the aforementioned factors must be analyzed and discussed before surgery.

A proper plan of procedure must be decided upon with the understanding that this type of patient presents a problem different from that of the noncardiac patient. The stresses and strains encountered during and after surgery are vastly dissimilar from those imposed on the patient during his daily routine. In general, the strain put on the heart by operative procedures is very slight but the cardiac patient is more susceptible to such changes as increased peripheral resistance, hypotension, reflex stimuli, hypoxia and hypercarbia.

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SADOVE

GALSTON

WYANT

ROLE OF THE INTERNIST

The principal role of the internist is, first, to determine whether the problem is definitely a surgical one or whether the picture presented is due to the cardiac disorder itself. It has been shown, and not too infrequently, that many abdominal operations have been performed when the actual cause of the trouble was cardiac in origin. Pericarditis or pneumonia in children may simulate acute appendicitis, and acute rheumatic fever may be mistaken for an attack of cholecystitis. Mitral stenosis, auricular fibrillation and subacute bacterial endocarditis may each be the cause of embolism to one of the abdominal viscera and may be of diagnostic value as the etiology of the acute abdominal emergency. Acute coronary thrombosis, as another example, may well present a picture mistaken for acute "gallstone colic," perforated peptic ulcer or acute pancreatitis. The importance of an accurate diagnosis in such individuals cannot be overemphasized.

The second duty and responsibility of the internist is to determine whether the prognosis of the cardiac condition is good enough to subject the patient to major surgery. It is advisable, of course, to use simple medical technics in patients with advanced heart disease whenever possible. However, one should not hesitate to subject them to operations that are considered urgent.

Lastly, and of no little importance, the internist as well as the anesthesiologist and surgeon should be familiar with the operative mortality in various cardiac disorders. Levine[4] made an intensive review of 414 cases subjected to 494 major operations. In all, the total operative mortality was 12.1 per cent. Of these 60 deaths, only 4 came under the classification of "unexpected"—i.e., if no operation had been performed the patient would not have died.

The mortality breakdown as a percentage of the specific cardiac conditions is as follows:

	Per Cent
Valvular disease (147 operations)	2.1
Nonvalvular heart disease (167 operations)—	
hypertension, chronic myocarditis, etc.	4.9
Auricular fibrillation (108 operations)	3.0
Coronary artery disease, angina pectoris (41 operations)	7.7
coronary thrombosis (20 operations)	40.0
Syphilitic aortitis (13 operations)	7.7
Paroxysmal tachycardia (6 operations)	0.0
Congestive heart failure (50 operations)	14.0
with nephritis	14.8
without nephritis	4.9
Hypertension—systolic over 160 mm.	7.3
systolic under 160 mm.	5.9

It may be concluded from this very enlightening study that those cardiac disorders causing the highest mortality figures during and following surgery are coronary thrombosis, heart disease with nephritis, congestive heart failure and angina pectoris. On the basis of these figures, it cannot be overlooked that there is a definite increase in surgical mortality of cardiac patients, since the total operative mortality of all patients is only approximately 1.5 to 2 per cent.

As a group, patients with heart disease stand surgical procedures fairly satisfactorily when handled correctly. Uncomplicated hypertension, even if the systolic pressure is above

200 mm. of mercury, adds but slightly to the risk of operation. Of course, in the advanced age groups with hypertensive and arteriosclerotic heart disease as well as other types, the operative hazard rises with increasing age.[5] Brumm and Willius,[6] in a series of 272 patients with coronary disease undergoing surgical procedures, reported that cardiac deaths occurred in only 4.3 per cent, 7 of the 11 deaths being due to coronary thrombosis. Thyrocardiac patients withstand operation surprisingly well, especially if properly prepared. A mortality of 4.25 per cent was shown by Lahey and Hurxthal[7] in a series of 303 operations. Of these, 216 had congestive failure, with 175 instances of auricular fibrillation; 87 had auricular fibrillation without failure. That congestive heart failure adds greatly to the operative mortality was brought out by Blumgart, Schlesinger and Zoll,[8] who explained that peripheral vascular collapse, such as occurs frequently following operation, may precipitate coronary occlusion.

Surgical procedures for congenital heart disease were formerly associated with extremely high mortality rates. Because of recent improvements in diagnostic and therapeutic ability the latest reports on Blalock's operation for tetralogy of Fallot and operations for the correction of coarctation of the aorta by Gross and Crafoord show the mortality to be surprisingly low.

It is to be stressed that proper preoperative therapeutic and diagnostic measures must be instituted. Brams[1] stated that surgical or dental manipulation of an infected focus may precipitate subacute bacterial endocarditis in patients with valvular or congenital heart disease. Bland and Jones[9] also wrote that surgical procedures may invite a flare-up of rheumatic activity. This is certainly accepted as truth, but the mortality of such patients is greatly lowered when a delay of at least six months is allowed after all signs of activity have disappeared.

In general, the condition of the myocardium rather than arrhythmias is the prime factor. Auricular fibrillation and flutter, extrasystoles and paroxysmal tachycardia, unless associated with evidence of myocardial damage, should not interfere with the decision to operate. Evidence of myocardial damage is indicated in the presence of a heart showing the strain pattern, gallop rhythm, e.g., pulsus alternans or pulsus bigeminus, ventricular tachycardia or any type of heart block. One or a combination of these findings should serve as a sign of increased risk.

ROLE OF THE ANESTHESIOLOGIST

The duty of the anesthesiologist is to acquaint himself thoroughly with the cardiac status, the over-all physiologic state and particularly the cardiac reserve of the individual patient. We feel that as far as heart strength is concerned, anyone who is able to carry on the usual daily functions such as walking upstairs or taking moderately long walks without much discomfort can usually withstand the hardships of surgery. The amount of strain that a patient is able to stand may be measured by several physiologic tests, such as the breath-holding time, determination of the vital capacity and an over-all estimation of the cardiovascular system. In general, the greater the vital capacity the better the respiratory exchange and anesthetic potential; the more efficient the circulation the better the transport of oxygen, of carbon dioxide and of the anesthetic and the better the control of blood pressure. Ovid O. Meyer[10] stated, "It is the ability to withstand the stress and strain of daily life, the carrying on of one's occupation . . . and other mental and physical activities that are the most helpful evidence of the heart's functional condition."

In order to overcome the hazards of operating in the presence of cardiac disease, several factors must be considered: the anesthetic must be safe; induction must be relatively quick so that excitement and struggling may be kept at a minimum; adequate oxygenation must be maintained to combat hypoxia; elimination of carbon dioxide must be efficient; the working conditions for the surgeon should be satisfactory, and the anesthetist must be skilled and familiar with the management of the anesthetic. Concerning this last point, Ralph Waters has often stated that the anesthetist and not the anesthetic is most important. A technic should be selected that will provide optimal working conditions, will not jeopardize the patient's life and will enable him to recover.[11]

Probably the most important single requirement is an adequate and continuous supply of oxygen. This implies, of course, that a patent airway be maintained at all times.

Should depression of respiration occur with resulting hypoxia and hypercarbia, the added strain on the heart may result in failure. Even though respirations remain adequate, a tissue hypoxia can still develop if there is an inade-

quacy of circulating hemoglobin to supply the tissues with the required amount of oxygen or if there is marked impairment of circulatory efficiency. Thus the presence of hypoxia, whether stagnant or anemic, must first be recognized.

The condition of the vascular bed and the status of the cardiac reserve are extremely important. A reduction in the peripheral vascular pressure, a decrease or increase in the venous return to the heart and the occurrence of shock and various reflexes during the procedure must be prevented.

PREOPERATIVE MANAGEMENT

The use of quinidine hydrochloride is becoming increasingly popular. This is especially true in the specialty of anesthesiology, where an injectable preparation (Brewer) has been made available. It is possible now to administer this drug intravenously in patients having symptoms which make prompt action desirable. The foremost indications for quinidine are ventricular tachycardia and some cases of auricular fibrillation. Extrasystoles, tachycardia, or flutter of either auricular or ventricular origin also respond to quinidine therapy.

Tovell and Steven[12] claimed to protect patients from dangerous cardiac irregularities by the "administration of quinidine 24 hours preoperatively followed by a therapeutic dose one hour prior to the beginning of the anesthetic. Because quinidine sulfate may render a susceptible heart more irritable, thus predisposing it to ventricular fibrillation, its use should be undertaken cautiously." We personally prefer the use of intravenous procaine wherever possible, in spite of the fact that it is a myocardial depressant. In an emergency where its use is suggested, an attempt must be made to weigh the advantages of such a depression against the cardiac irregularity itself. The use of ouabain to combat myocardial depression, particularly during shock, has recently received attention.[13] Procaine amide is a new agent which is being studied for its prophylactic and therapeutic value in cardiac arrhythmias. While there appears to be little doubt as to its value in the correction of ventricular arrhythmias, sufficient time has not yet elapsed to assign to this drug its final place among the agents at our disposal in the management of the cardiac patient.

The patient's history should give valuable information as to the status of the heart and its predisposition to decompensation. If the patient is decompensated, compensation should be restored, if at all possible, before he comes to the operating room. Preoperative treatment by a competent cardiologist is essential and, if necessary, the patient should first be digitalized and excess fluids removed. Digitalization, of course, does not necessarily mean adequate compensation. If the surgical condition is an acute one demanding immediate intervention, strophanthin K or other similar-acting drugs may be utilized by the fast intravenous method. However, one loses prognostic value when these are employed. They definitely should not be used prophylactically, as our experience in many cases has shown that the patient does much better and runs a smoother course if these drugs are given only when indications strongly favor their use.

SUPPORTIVE THERAPY

Teamwork is an essential measure in the control of intravenous fluids. Those responsible for its administration must be acquainted with the cardiac status. Whole blood, plasma or other fluids may be necessary but must be administered with caution, because an excessive amount may result in serious sequelae such as pulmonary edema and acute cardiac decompensation. One must replace blood as it is lost and maintain the fluid volume both in the splanchnic bed and peripherally. Failure in an adequate fluid replacement may result in shock. On the other hand, overloading of the myocardium may be the very thing that kills the patient.

To proceed with safety requires skilled knowledge of the physiologic mechanisms involved plus sufficient clinical data, e.g., color, tone and temperature of the skin, capillary refill time, blood pressure and pulse pressure, pulse and respirations. All these factors must be correlated with the others and evaluated together with the surgical procedure at that particular time. For example, should a tachycardia occur at the moment of extreme surgical stimulation, it is considered to be of little importance. However, with no reflex stimulation, increasing tachycardia and tachypnea may be indicative of early cardiac failure. A change in respirations, such as gasping, associated with rapidly increasing pulse rate and marked pallor of the skin, may be indicative of impending cardiac collapse. None of these factors mean very much by them-

selves unless their interrelationship with each other, the surgical procedure and the influence of the anesthesia are evaluated.

The cardiac patient is better able to withstand a state of moderate hypotension than an overloading (in terms of operating load). Tachycardia, with its shortened diastolic phase and diminished coronary circulation, prevents the heart from responding to a greater load. Shock and hypotension, with their diminished cardiac return and output, may call for an added exertion by the heart which it might be unable to produce. The compensatory ability of the individual is greatly reduced in the old and arteriosclerotic patient. Therefore, shock must be prevented at all costs, overloading must be avoided and the heart must be maintained at as slow and efficient a rate as possible. The keen observer will recognize changes during surgery, such as incipient pulmonary edema, diminished pulse pressure and elevation of the diastolic phase, among others.

Recent work has shown the importance of estimating the blood volume, since many chronically ill patients arrive in the operating room with normal hematocrit values, yet with diminished red cell volume. This state interferes with adequate oxygenation; one may say that such patients are in a form of "chronic shock."[14,15]

Condemnation of excessive amounts of saline cannot be overemphasized. The intravenous infusion of saline solutions must be held to an absolute minimum. A maximum of 4.5 gm. of sodium chloride daily should be maintained, depending on the status of the kidneys and the amount of salt lost by the body through sweating, vomiting, gastric decompression, etc. Too much salt leads to pulmonary edema with the production of hypoxia and changes in the lungs and circulation. The level of plasma protein and its derivatives should be brought to normal before operation if at all possible. Pulmonary edema develops much more easily if there is a diminution in the plasma protein.

The influence of electrolyte balance is of major importance since, even if all other factors are maintained in an optimum state, an imbalance of the electrolytes, such as a hypopotassemia, may cause cardiac embarrassment.

CHOICE OF ANESTHETIC

It is only logical to assume that the anesthesiologist, if well qualified and entirely capable, would have the final say as to the choice of agent and technic. However, it should be granted that the procedure is definitely chosen only after careful analysis of the situation and in careful consultation with the internist and surgeon. He must be fully aware of the great danger during the period of induction, the pronounced reflex stimulation during intubation and the possible hazards to the heart at various stages of anesthesia.

The period of induction should be devoid of fear, excitement and discomfort. Any or all of these may add to the strain of the already weakened heart. Breath-holding and laryngeal spasm are to be guarded against, since they are direct causes of hypoxia. Unskilled or traumatic intubation might result in coronary spasm. If the anesthetic is administered uneventfully, the agents employed generally will produce no harm to the patient. In any event, marked changes in blood pressure must be prevented (high spinals may cause hypotension!). Technics likely to produce hypoxia are to be avoided and, finally, a depth of surgical anesthesia must be reached that will be sufficient to abolish reflex activity which may result in cardiac spasm, cardiac irregularity or changes in the blood pressure.

One may avoid unnecessary depth of anesthesia by supplementary technics such as utilization of curare, local anesthesia or intravenous barbiturates. It is still too early in our experience to form a definite conclusion as to the position of intravenous procaine. However, its use in abolishing certain noxious nervous reflexes has now been established. Judiciously used, however, it seems to have a definite place in surgery of the cardiac patient.

A brief summary of the various anesthetic agents and their usefulness in patients with cardiac disease follows:

Nitrous oxide—This gas has the advantage of having no toxic effects on the parenchymatous tissues. When used with curare it will produce adequate relaxation for many surgical procedures, but its use probably should be limited to those cases in which little reflex activity is expected.

It has the disadvantage and hazard in that the induction stage may be accompanied by breath-holding and excitement. A relatively low oxygen content is also associated with its use,

which by itself is contraindicated in surgery of cardiac patients.

Ethylene—Very similar to nitrous oxide, with the exception that a slightly higher concentration of oxygen may be administered. An explosive element, however, is added.

Cyclopropane—The use of cyclopropane depends to a great degree on the skill and the experience of the anesthetist as well as the type of pathology present. A conscientious effort must be made during its administration to follow the cardiac status from second to second, not from minute to minute. It may be the anesthetic agent of choice in the patient in whom a prolonged diastolic phase and slow heart beat are desirable and where there is little evidence of bundle branch block and prolonged conduction time. In those cases where reflex stimuli to the myocardium would be expected otherwise, cyclopropane may again be a wise selection.

THE advantages of this gas are the ease with which the depth can be controlled, relative absence of effects on the parenchymatous tissues, the ease of emergence from the anesthetic and the high concentration of oxygen that can be used efficiently in the mixture. Curare is an excellent adjunct to cyclopropane in affording a greater degree of relaxation, but its use must imply an extreme degree of skill and continuous observation of the patient on the part of the anesthetist. It must be stressed that the value of pulse rate and blood pressure as diagnostic and prognostic factors is greatly diminished here. The fact that they appear to be adequate and encouraging when the patient is asleep may be misleading and may represent nothing more than the pharmacologic effect of the drug. The phenomenon of "post-cyclopropane shock," although rarely seen in the hands of the expert anesthesiologist, may occur upon the withdrawal of the gas and its oxygen mixture.

Cyclopropane should never be used in conditions of bundle branch block or prolonged conduction time. Occasionally the patient may develop arrhythmias while under anesthesia and it may be necessary to change to another agent, e.g., ether. The frequency of such instances may be greatly reduced if a high concentration of oxygen and an adequate airway are maintained at all times. The presence of hypoxemia increases the chance of development of cardiac irregularities, and therefore must be prevented.

Ethyl chloride, VINETHENE® *and chloroform*—These will be omitted purposely from the discussion, since their toxic effects on the myocardium involve such a great hazard to the patient.

Ether—Generally speaking, ether adds very little to the surgical risk. Slight disturbance is produced to the body as a whole but it may have a definite beneficial effect on the physiology of the heart. Its use is limited in that it must be preceded by an induction agent, and the patient's slow emergence delays the return of normal reflexes. The safety factor is high and it is perhaps the anesthetic agent of choice when skilled personnel are not available.

Spinal—Here again the cardiac status of the patient and his ability to withstand changes in the circulation are of extreme importance. Hypotension frequently is produced by spinal anesthesia. "Under such circumstances a sudden fall in arterial blood pressure leads to an immediate decrease in coronary flow; if the decreased flow is adequate for altered metabolic needs of the myocardium, no harm is done, but if the flow is inadequate relative coronary insufficiency occurs." . . . However, "during a period of hypotension, such as accompanies spinal anesthesia, the coronary blood flow becomes more abundant relative to the cardiac needs."[16] There is little doubt that these changes may be seen more abruptly under this form of anesthesia but in the hands of a good anesthetist this need not be true. A high spinal anesthetic should be avoided if at all possible, but when used for lower abdominal or perineal surgery it has an important position in the armamentarium of the anesthesia department. The presence of pulmonary congestion also might be an indication for its use.

Locals—This is an ideal type of anesthesia for the cardiac patient when it can be utilized without undue psychic strain. It is frequently used in combination with nitrous oxide and oxygen, thus providing the desirable psychic relaxation. When used alone with oxygen it does not protect the body against the ever-present reflexes, unless used in deep anesthesia; such depth, however, increases the postoperative sleep period. Postoperative pulmonary complications thus may result. Music has been employed for this purpose in some clinics with gratifying results.

ROLE OF THE SURGEON

The surgeon, although not directly responsible for the treatment of the cardiac pathology or management of the patient during administration of the anesthetic, is directly concerned and must be willing to assume his full share of responsibility. He not only must familiarize himself with the condition of the patient but also must aid in the plan of procedure. In his hands lie the tasks of minimizing surgical shock, of working as effectively and automatically as possible, as well as accomplishing the surgery for which the patient was brought to the operating room. It is his duty to recognize what manipulations must be performed with gentleness and caution so as not to add to the strain of the heart.

Marked precautionary measures are required in patients with cardiac disease. The surgeon must hold blood loss to an absolute minimum; he must observe gentleness in the handling of tissues, avoid unnecessary traction and visceral stimulation, and be skilled in the use of local anesthesia as a supplement wherever indicated. The surgeon and anesthetist must cooperate as a working unit, not permitting the screen to act as a barrier between them. Both are working for the welfare of the patient whose prognosis is directly proportional to the understanding each has for the other's tasks and difficulties.

POSTOPERATIVE THERAPY

The treatment of the patient does not end in the operating room. Each member of the surgical team has his role to play once the cardiac patient is returned to his recovery bed. Careful vigilance and conscientious observations must be maintained constantly. Postoperative complications must be considered and treated prophylactically. There must also be a continuance of the management of the afflicted heart. Only then, and not until complete recovery of the patient is assured, does the work of the team come to a successful completion.

The therapy of paramount importance is the administration of oxygen. This is especially true when shock or prolonged hypotension is present. We have made it a practice to use oxygen postoperatively in all patients with heart disease following major surgical procedures. The inhalation of 100 per cent oxygen produces a fall in cardiac output in normal individuals primarily because of a decrease in cardiac rate.[17, 18] Eckenhoff states that when a heart is laboring under a strain with an elevated heart rate and possibly an added suboxygenation of the arterial blood, the reduction in cardiac output following administration of 100 per cent oxygen may exceed the 10 per cent found in normal individuals. The reduction in cardiac work plus the increase in arterial oxygen tension thus would be additive in minimizing or preventing permanent myocardial damage by simultaneously decreasing oxygen demands and increasing oxygen supply.[16]

A very careful observance of the blood pressure and pulse must be maintained frequently and diligently. Shock must be prevented or treated immediately should it occur. Certain drugs may be used for the maintenance of blood pressure, but they must be utilized with caution. In the presence of coronary arteriosclerosis, NEOSYNEPHRIN® is advisable since it has a primary pressor effect with a minimum of cardiac effect. If the patient shows evidence of cardiac damage or of decreased exercise tolerance, an attempt is made to increase the coronary flow and thus the oxygen supply without increasing cardiac work or oxygen demand. Papaverine hydrochloride for this purpose is probably much superior to nitroglycerin, aminophylline or CORAMINE.®

Intravenous fluids, utilizing whole blood, blood plasma, dextrose and isotonic sodium chloride will often prevent shock or combat it once it is established. One should remember to keep the salt intake at a minimum and the blood proteins in a state of equilibrium. We cannot overemphasize the fact that to overload the system with an overabundance of fluids might cause a greater disturbance than shock itself. Thus the intravenous administration of fluids should be performed wisely.

Close supervision of the patient's tracheobronchial tree must be maintained and a clear and patent airway assured at all times. If necessary, frequent aspirations should be done to clear the pharynx, trachea and bronchi of mucus, vomitus and bronchial secretions.

Since the cardiac patient has such a poor response to infection and is so easily susceptible to pulmonary embolism, infarction and pneumonia, his postoperative routine should be such that these dangers are prevented. Frequent deep breathing exercises, with stimulation to produce coughing (e.g., carbon dioxide inhalations administered by a member of the anesthesia

department), early and frequent changes in position and the use of antibiotics must not only be ordered but supervised.

Frequently, following prolonged anesthesia for major surgery, urinary suppression and hepatic insufficiency develop. Careful observation will enable the clinician to diagnose these conditions early; the more rapidly therapy is instituted the better will be the prognosis.

SUMMARY

THE important role of the individual members of the surgical team—internist, anesthesiologist and surgeon—cannot be too strongly stressed in the management of the cardiac patient. Each must perform his function with the utmost skill while giving due consideration to the particular problems of the other. All must be completely familiar with the cardiac status as well as the surgical problem confronting them. When this evaluation is thoroughly learned and the planned management skilfully performed, the patient's prognosis is very much improved. We believe that the trend is increasing to make such teamwork more prevalent, and with it the advent of safer surgery for the cardiac patient.

REFERENCES

1. BRAMS, WILLIAM A.: Treatment of Heart Disease. Philadelphia, W. B. Saunders Company, 1948, chapter 14.
2. BLALOCK, ALFRED and RAVITCH, M. M.: In BANCROFT, F. W. and WADE, P. A.: Surgical Treatment of the Abdomen. Philadelphia, J. B. Lippincott Company, 1947, chapter 7.
3. ELLIS, LAURENCE B.: The surgical risk and management of patients with hypertension and nephritis. In MASON, R. L. and ZINTEL, H. A.: Preoperative and Postoperative Treatment. Philadelphia, W. B. Saunders Company, 1947, chapter 6.
4. LEVINE, SAMUEL A.: Clinical Heart Disease. Philadelphia, W. B. Saunders Company, 1945, chapter 18.
5. SPRAGUE, H. B.: The heart in surgery; an analysis of the results of surgery on cardiac patients during the past ten years at the Massachusetts General Hospital. Surg., Gynec. & Obst. 49:54-58 (July) 1929.
6. BAUMM, H. J. and WILLIUS, F. A.: The surgical risk in patients with coronary disease. J.A.M.A. 112:2377 (June 10) 1939.
7. LAHEY, F. H. and HURXTHAL, L. M.: Postoperative end results in three hundred thyrocardiacs. Am. J. Surg. 24:225-231 (May) 1934.
8. BLUMGART, H. L., SCHLESINGER, M. J. and ZOLL, P. M.: Multiple fresh coronary occlusions in patients with antecedent shock. Arch. Int. Med. 68:181-198 (August) 1941.
9. BLAND, E. F. and JONES, T. D.: Clinical observations on the events preceding the appearance of rheumatic fever. J. Clin. Investigation 14:633-648 (September) 1935.
10. MEYER, O. O.: Evaluation of the cardiac patient for anesthesia and surgical procedures. Wisconsin M. J. 47:987-989 (October) 1948.
11. COLLINS, V. J.: Anesthetic management of the cardiac patient. Yale J. Biol. & Med. 19:979-990 (July) 1947.
12. TOVELL, R. M. and STEVEN, R. J. M.: Anesthesia and the role of anesthesiologists of today. J.A.M.A. 141:8 (September 3) 1949.
13. SANKEY, B. B. and CRAWFORD, T. I.: Ouabain as an adjunct in treatment of shock. Anesth. & Analg. 29:148 (May-June) 1950.
14. NELSON, W. and LINDEM, M. C.: Studies of blood volume in patients depleted as a result of trauma. Am. J. Surg. 80:727 (November) 1950.
15. NELSON, W., CLARK, J. and LINDEM, M. C.: Blood volume studies in the depleted surgical patient; clinical applications. Surgery 28:705 (October) 1950.
16. ECKENHOFF, J. E.: The physiology of the coronary circulation. Anesthesiology 11:168 (March) 1950.
17. DRIPPS, R. D. and COMROE, J. H., JR.: Effect of inhalation of high and low oxygen concentrations on respiration, pulse rate, ballistocardiogram and arterial oxygen saturation (oximeter) of normal individuals. Am. J. Physiol. 149:277-291 (May) 1947.
18. WHITEHORN, W. V., EDELMAN, A. and HITCHCOCK, F. A.: Cardiovascular responses to the breathing of 100 per cent oxygen at normal barometric pressure. Am. J. Physiol. 146:61 (April) 1946.

Selecting the Proper Operation for Benign Hypertrophy of the Prostate

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This is a brief discussion of the indications for operation upon benign prostatic hypertrophy and a comparison of the mortality rates of transurethral resection in the hands of the author and others with that of the open operations. The mortality rate of the former is as low as 0.505 per cent as compared to 5 to 6 per cent for the open operations.

It is my aim to try to present this subject from the point of view of the general practitioner, the internist and the patient. It is of greater importance, therefore, to try to determine *whether* and *when* operation is needed for benign hypertrophy of the prostate than it is to say *which* operation should be done in a given patient.

INDICATIONS FOR OPERATION

It is my practice to consider five main factors in reaching the first decision. First, of course, is the severity of symptoms, and this is a relative thing. One patient may be so irked by delay in the starting and reduction in the size of the stream and by nocturia that he cannot get back to sleep and will require operation to restore his peace of mind. Another with exactly the same symptoms will be so complacent (or fear operation so much) that he will recoil from the thought of surgery until his situation is intolerable. One cannot truthfully say that the second patient is being unwise unless or until he develops evidence of damage to the urinary tract incident to the obstruction or its complications, which is the second factor in the decision.

Obviously, the occurrence of a persistent or stubbornly recurring cystitis initiated and maintained by residual urine or by vesical calculi incident to prostatism requires surgical treatment to make the patient comfortable. It used to be customary to say flatly that the persistence of residual urine above a certain fixed amount required operation lest the resultant "backpressure" ruin the kidneys. However, we have gradually learned that there is no constant relationship between volume of residual urine and degree of damage to the upper urinary tract. This is doubtless due to the fact that variations in the tone of the detrusor muscle and in the effectiveness of the ureterovesical valves greatly alter the effects of residual urine upon the ureters and renal pelves. If the residual urine seems unduly high in relation to the symptoms, the making of an excretory urogram will indicate whether dilatation is occurring in the kidneys or ureters or whether the elevated pressure is injuring the bladder; if so, operation should be advised. If not, the situation is not urgent but the patient should be kept under observation.

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A third factor involves geographical and occupational considerations. It is evident that a patient whose home is far from medical assistance or who travels much in remote places should consider operation while symptoms are still mild lest he suffer acute retention while expert aid is difficult or impossible to secure. Conversely, the sedentary worker in the city may be justified in postponing operation as long as there is no evidence that the prostatism is damaging his urinary tract.

A fourth factor in our decision as to whether operation is necessary or desirable is the surgical risk. Obviously the patient in excellent general condition will do well to "have it over with" while symptoms are only moderately troublesome. On the other hand a man with a very poor cardiovascular system or a serious complicating disease such as leukemia would do well to put up with a moderate amount of inconvenience rather than to submit to an operation which might very well kill him. This view is based on the assumption that life with some inconvenience is immeasurably better than death incurred in seeking a cure of a nonmalignant and very slowly progressing disorder.

The fifth factor is resolved very simply by asking quite candidly, "Would I have an operation if I were in the patient's shoes and knew what I now know?" This may seem a pretty severe criterion, but it is one which we surgeons would do well to apply more often, resisting the temptation to say, "Oh, well, that's different," because, difficult as it may be to believe at times, surgeons are—or certainly should be—people too.

To summarize, surgical relief of benign prostatic obstruction is needed when: (1) the symptoms are severe enough; (2) the patient lives or travels far from help; (3) the urinary tract is being damaged by the obstruction or its complications; (4) the risk is not prohibitive due to extra-urinary disease, and (5) you would yourself submit to operation in the same circumstances.

PREPARATION FOR OPERATION

THREE points must be considered in deciding whether the patient is ready for operation. First is his general and nutritional state. One must make sure, by clinical judgment and necessary laboratory studies, that he is alert, bright of eye, active and suffers no aberrations in protein and mineral metabolism, which must be corrected beforehand if operation is to be done safely.

Second is the presence of extra-urinary disease which would affect the risk adversely if not treated beforehand. Obvious examples of such diseases are cardiovascular disease, anemia, diabetes, leukemia, etc.

Third is the condition of the urinary tract. This includes the state of the kidneys and the presence of complications in the lower tract such as vesical diverticulum, stones, tumors requiring treatment of themselves, and severe infections. A KUB should precede every prostatic operation to exclude stone. If renal function is normal or nearly so and there is a story of hematuria, or if the amount of residual urine is out of proportion to the symptoms, an excretory urogram should also be made. Time does not permit discussion of the treatment of complications.

If the renal function and general state are good and there are no serious complications in the bladder, preparation of the patient with the catheter is not only unnecessary but harmful in that it may introduce infection—thus increasing the risk and delaying operation. Such a patient should not be instrumented (unless he has a complete retention) until the time of operation.

TABLE 1

MORTALITY OF OPERATIONS UPON THE PROSTATE

AUTHOR	YEAR	TYPE	CASES	MORTALITY
Nesbit	1946	TUR[1]	2425	1.81
Thompson	1948	TUR (punch)	11,522	1.20
Creevy, Webb, Smith	1950	TUR	1000	0.60
TOTAL	[1]Transurethral resection		14,947	1.29
Residents, U. of Minn.	1950	TUR	560	2.50
Whole Series, U. of Minn.	1950	TUR	1560	1.20

In the latter event he is given aureomycin and catheterized as necessary until the first opportunity for operation. If there are no complications, aureomycin is started the night before operation.

If renal function is moderately impaired, aureomycin is started, catheterization is done two or three times daily, fluids are forced and operation is undertaken as soon as the general condition and appetite as well as the urinary output are satisfactory.

If there is severe impairment of renal function, preparation consists of antibiotics, the inlying catheter and forced fluids. If the urine is purulent, a two-way catheter is used with a "bladder splint" to irrigate the bladder continuously with 0.8 per cent sulfanilamide in saline.

If the patient's condition does not improve within a few days, cystostomy is done and continuous drainage instituted so that preparation may be continued until improvement ceases, without danger to the urethra and adnexa from the inlying catheter.

To repeat, the objective is an alert, active patient who eats well and has a good urine output, the tests of renal function being of distinctly secondary importance.

SELECTION OF THE OPERATION

Having determined that surgical relief of the obstructing prostate is needed, how do we decide which operation should be selected? The decision should be made in the full knowledge that there is room for a good deal of honest difference of opinion dictated by personal preference. Just as I cannot tell you what is the greatest book, the finest play or the most delicious food in the world, so also I can give you only my personal opinion as to which is the best prostatic operation in a given situation.

Four operations are in common use: (1) perineal, (2) suprapubic, (3) transurethral and (4) retropubic. While these are all called prostatectomy, it is important to understand that the open operations are usually enucleations, while the transurethral operation is properly called a resection. Benign hypertrophy of the prostate appears to arise from the suburethral glands and to be definitely separated from the prostate gland itself by a fibrous capsule. This permits us to enucleate it and to leave behind the compressed normal prostatic tissue which constitutes the "surgical capsule." Enucleation or resection is preferred for benign hypertrophy over total removal because it yields satisfactory and lasting relief with less risk to life and to postoperative urinary control than is inherent in total removal; moreover, the latter ordinarily terminates sexual life while resection and enucleation—unless carried out perineally—usually affect sexual activity but little. What is said from here on applies to resection or to enucleation and not to total excision.

Of *perineal enucleation* we may say that it has the second lowest mortality, the greatest risk to urinary continence and to the continuity of the rectum and is relatively difficult to master, probably because of the psychologic hazard of injury to the rectum. The hospital stay is relatively long. In my hands it is used mainly for an occasional low-lying, fairly large gland in a thin patient, and then chiefly to keep in trim for radical perineal prostatectomy for early cancer.

Suprapubic enucleation carries the greatest risk to life and the least danger to control of urination. The average hospital stay is relatively long, and it is the easiest of the prostatic operations to master.

Retropubic enucleation has a mortality inter-

TABLE 2

MORTALITY OF OPERATIONS UPON THE PROSTATE

AUTHOR	YEAR	TYPE	CASES	MORTALITY
Young	1926	P[1]	1000	3.20
Barney	1936	P and SP[2]	816	14.20
Hunt and Walters	1938	SP[2]	1000	5.40
Millin	1949	RP[3]	757	4.50
TOTAL			3573	6.60

[1]Perineal enucleation. [2]Suprapubic enucleation. [3]Retropubic enucleation.

mediate between those of the perineal and suprapubic operations, and an intermediate risk to urinary control. The hospital stay is shorter than that with the preceding two. It is the operation of choice in the patient with a very large gland, especially if he is obese. Small to moderate-sized glands which cannot be handled transurethrally are best treated suprapubically because they are hard to get at and are more likely to bleed profusely when approached retropubically. The suprapubic approach is also preferred when lesions of the bladder require open operation.

Transurethral resection, when properly done, has a far lower mortality than any of the enucleations, involves a considerably shorter stay in the hospital and the least discomfort of any prostatic operation. The risk to sexual potency and to urinary control is minimal. It is the most tedious of the operations and the hardest to master. It is the operation of choice for obstructing carcinoma with local extension or metastasis, for fibrosis, and for small to moderate-sized benign hypertrophies. To me personally this means anything under 100 or 150 gm. in the absence of specific contraindications to the transurethral approach.

These contraindications are four in number: (1) hips fixed in such a position as to prevent insertion and manipulation of the resectoscope; (2) a contracted bladder with any but a very small gland—(since one has to resect under direct vision with running water, the small bladder interrupts the procedure so often as to make it impracticable); (3) a small urethra which would be traumatized by the resectoscope, with resulting periurethritis and stricture—(in most instances, even though the penile urethra is small, a perineal urethrotomy will permit the use of the standard resectoscope without undue trauma; for small glands the smaller resectoscopes [24 and 26 French] may be used but they are inadequate for larger prostates); and (4) too large a prostate. This is a relative term the exact significance of which depends upon the attitude of the resectionist. One should remember that Alcock found that the average amount of tissue enucleated in a thousand consecutive suprapubic operations was in the neighborhood of 30 gm., indicating that the obstructing prostate is not usually very large and that the potential applicability of the transurethral operation is fairly great. When it is difficult to estimate the size of the prostate because of a thick perineum, a urethrogram may be of great assistance.

WHY insist upon the wide application of transurethral resection if it is tedious and difficult in the larger glands? Because of its extraordinarily low mortality. In July, 1946, two associates (Drs. E. A. Webb and B. A. Smith, Jr.) and I began using isotonic irrigating fluid for transurethral resection to prevent the untoward effects of hemolysis upon the kidneys. Between July, 1946, and October, 1950, we have resected the prostates of 1187 consecutive patients with six surgical deaths (0.505 per cent). Nesbit has reported some 2400 cases done by him and his residents with a mortality of 1.8 per cent, and Thompson has recorded over 11,000 cases with a death rate of 1.2 per cent. The difference between these figures and ours is probably due to our use of isotonic fluid for irrigation. (Table 1.)

One reads and hears that recent developments in anesthesia, transfusion and antibiotics have made the mortality of the open operations as low as that of transurethral resection. Is this true? The answer is no. Their mortality has been reduced, but not to that of endoscopic resection by any means. The mortality of some

TABLE 3

MORTALITY OF ENUCLEATION OF PROSTATE 1945-1949

AUTHOR	YEAR	TYPE	CASES	MORTALITY
Esersky and Greenberg	1945	SP	50	1
Zimmerman	1946	SP	51	2
Rees (England)	1947	SP	242	23
Rees (England)	1947	P	45	4
MacDonald (Canada)	1947	SP	495	39
Morville (Denmark)	1947	RP	20	2
Brunner (Switzerland)	1947	RP	51	2
Stock (England)	1947	SP	40	1
Derycke (Belgium)	1947	RP	22	1
Goldstein	1947	P	36	1
Eikner	1948	SP	89	1
Treiger, et al.	1948	SP	108	9
McCrea	1948	SP	100	4
Grant, Lich et al.	1948	RP	65	0
Lowsley et al.	1948	RP	20	0
Galbriath (England)	1948	SP	318	12
Ward (England)	1948	VC	50	2
Walters (England)	1948	ASP	115	9
Jacobs (Scotland)	1948	RP	205	15
Bacon	1949	RP	102	7
Weijlandt (Holland)	1949	RP	60	3
Higbee	1949	P	336	6
Presman and Rolnik	1949	RP	40	3
TOTAL			2760	147
Operative Mortality				5.3 per cent

3500 open operations, as stated in the literature before the antibiotic-anesthesia-transfusion era, was 6.6 per cent (Table 2), while in a series of 2800 such operations collected from the literature between the end of 1944 and the beginning of 1950 the mortality was 5.3 per cent—still from three to nine times higher than that which was just reported for transurethral resection. (Table 3.)

To summarize, my personal choice of operation for benign hypertrophy of the prostate is as follows: (1) transurethral resection for the average patient; (2) retropubic enucleation for the very large gland in the obese patient; (3) suprapubic enucleation for the moderate-sized glands in which resection is contraindicated, or in which a complicating lesion of the bladder requires open operation; (4) perineal enucleation for low-lying, moderate-sized glands in thin patients (to keep in trim for radical perineal prostatectomy for early cancer).

These views appear to be well supported by the mortality rate (0.505 per cent) which has been attained for transurethral resection since adopting the use of isotonic irrigating fluids to prevent hemolytic reactions.

REFERENCES

MORTALITY OF OPEN OPERATIONS
(from older literature)

1. BARNEY, J. D.: Twenty-five years of urology. Tr. Am. A. Genito-Urin. Surgeons 29:285, 1936.
2. HUNT, V. C. and WALTERS, W. A.: Suprapubic prostatectomy: report of one thousand cases. Surg., Gynec. & Obst. 46:769, 1938.
3. MILLIN, T.: Retropubic prostatectomy. Lancet 1:381, 1949.
4. NESBIT, R. M. and SCHINDLER, J. S.: Prostatic surgery in University of Michigan Hospital in 1945. Urol. & Cutan. Rev. 50:197, 1946.
5. THOMPSON, G. J.: Mortality of transurethral resection. Personal communication, 1948.
6. YOUNG, H. H.: Practice of Urology. Philadelphia, W. B. Saunders, 1926, vol. 1, p. 496.

Use and Abuse of the Dextrose Tolerance Test

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The dextrose tolerance test is commonly misinterpreted as an index of the ability to oxidize carbohydrate. This misinterpretation and the fact that the test dose of sugar is usually administered by the oral route render the test practically worthless. Actually, the test is chiefly an index of the efficiency of blood sugar regulation by the liver, under the influence of various endocrine glands. Thus interpreted and done intravenously, it can yield useful information.

THE medical literature is full of such references as, "The carbohydrate metabolism of the patient was investigated," or, "Carbohydrate metabolism in this patient was abnormal," or, "The carbohydrate metabolism returned to normal." If you read those papers further you will find that the authors are usually basing their statements about carbohydrate metabolism on the dextrose tolerance test (otherwise called the glucose tolerance test or the sugar tolerance test). You will also find that the test dose of sugar is usually 50 to 100 gm. given by mouth, and that when the dextrose tolerance curve is diabetic in type the author is apt to say, "The dextrose tolerance test indicated a deficiency in the oxidation of carbohydrate." Such statements are a misinterpretation of the nature and significance of the dextrose tolerance test and they show that the author lacks an awareness of what has happened in carbohydrate metabolism during the last 10 to 15 years.

I should like to outline some of the evidence which shows that the dextrose tolerance test is chiefly an index of the efficiency of blood sugar regulation. It is true that increased sugar utilization and the storage of glycogen do play minor roles in determining the shape of the dextrose tolerance curve. But the most important factor is the efficiency of a regulating mechanism which resides chiefly in the liver, and the dextrose tolerance test, when properly done, tells you something about the function of the liver. For this and other reasons the facts that I am about to outline to you have certain important clinical implications.

It is quite evident from common experience that there is a very efficient blood sugar-regulating mechanism in man and in the higher mammals. As you know, whether you are resting in bed or playing a fast set of tennis, the blood sugar level hardly budges. Under those circumstances, of course, there is a tremendous difference in the rate of utilization of carbohydrate. When you put a muscle from complete rest into violent activity, you can increase its oxygen consumption some thirty times—yet the blood sugar level remains fairly constant except during the most violent and prolonged work.

Similarly, whether you are fasting or eating a hearty meal, the blood sugar stays constant. You can disturb the blood sugar level for only one or two hours after taking in an amount of sugar which is enough to last you for 6 to 12 hours. Obviously, all that sugar is not oxidized within one to two hours. Part of it is used and part of

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it is stored. But there must be an additional and efficient regulating system which disposes of that sugar rapidly and brings the blood sugar back to its former level.

I like to explain the principles of the mechanism by a simple mechanical analogy which is shown in Figure 1. In this diagram the blood sugar level is compared to the level of water in a tank—a tank which is in dynamic balance because the liver is pouring just as much sugar into the blood as the tissues are drawing off from the blood. Only when these two rates of inflow and outflow are equal can the blood sugar level stay constant. We know that the outflow to the tissues is a very variable thing: it varies from minute to minute and from hour to hour as you rest or work, so that the only explanation of the fact that the blood sugar is level must be that the liver varies its outpouring of sugar accordingly. When more is used, the liver pours more into the blood; when less is used, it pours less into the blood.

Figure 2 indicates that some increased utilization of sugar probably does occur during the dextrose tolerance test. The curves of sugar utilization in this diagram were obtained from experiments in animals. I won't go into the details of the experiments except to say that a chemical balance sheet is drawn up, which includes figures for all the carbohydrate present in the animal's body at the beginning of the experiment and for all the carbohydrate at the end of the experiment; therefore, we can determine how much the animal used in between. You can see that between certain blood sugar levels the use of sugar is directly proportional to the height of the blood sugar level. When the blood sugar level gets above a certain point it makes no further difference, but between about 100 and 500 mg. per cent the higher the blood sugar level, the more sugar is used. Hence, as the blood sugar rises after the ingestion of a test dose of sugar, some extra sugar is used because of this factor.

Figure 3 shows that glycogen storage is also a factor. These happen to be in vitro experiments done in the Warburg apparatus, where rat diaphragms (that is, thin slices of muscle) are incubated with different percentages of glucose in the medium. They show that even in a simple system like that the deposition of sugar as glycogen varies directly with the concentration of sugar in the medium. Therefore, when you give a dextrose tolerance test and you raise the blood sugar level, some of the administered sugar is deposited as glycogen.

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THERE are, therefore, three factors in the disposal of the sugar you give in your dextrose tolerance test. They are (1) hepatic regulation, (2) increased utilization and (3) increased glycogen storage.

Why do I say that it is the hepatic regulation that is the most important factor, and that the others are minor? That is shown by the experiments represented in Figure 4.

This is a composite graph of many dextrose tolerance tests done in animals under the following conditions: You remove the pancreas from animals so that they are completely diabetic and have no insulin, and then you inject just enough insulin by a constant injection machine to maintain a normal blood sugar level. These animals therefore are restored to normal in a restricted experimental sense, except that they cannot vary their insulin production according to the amount of sugar they take; they must get along on the steady, constant amount of insulin which is coming from their artificial substitute for a pancreas.

When you give such animals dextrose tolerance tests they give you perfectly normal curves,

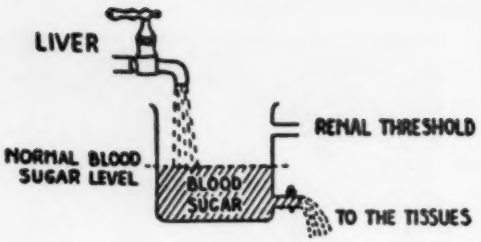

FIGURE 1.

as shown in Figure 4. The particular shape of the curve is due to the fact that a large dose of sugar is used and it is administered intravenously, and so on, but for these conditions they are perfectly normal curves; hence the amount of extra insulin available does not affect the curve. If the animal has enough insulin to maintain a normal blood sugar level he has enough insulin to give you a normal dextrose tolerance curve. He does not need an extra secretion of insulin.

Figure 5 shows what happens when you remove the liver from animals and administer a constant injection of glucose—just enough to maintain a normal blood sugar level. These animals have their pancreas, they have their tissues, they can oxidize as much as they wish, they can store as much as they wish, but there is one thing they cannot do—they cannot vary the amount of blood sugar which is coming from their artificial liver, the constant injection pump. As you see, these animals give markedly diabetic dextrose tolerance tests. So although all the other factors are there, including utilization and storage, it is quite clear that when the liver cannot make an adjustment of its sugar output you cannot have a normal dextrose tolerance test. That is why I say that the regulating mechanism of the liver is the most important factor.

This regulating mechanism in the liver has been shown directly. Some years ago, with the cooperation of a group of investigators at the Mayo Clinic, we did the experiments presented by Figure 6, which depended upon using a thermostromuhr (blood velocity-measuring device) so that we could measure the flow of blood through the liver. By analyzing samples of the blood flowing into and out of the liver, it was possible to multiply blood sugar difference by rate of bloodflow, and therefore to get an accurate measure of the amount of sugar entering and leaving the liver per unit of time.

The continuous line in Figure 6 represents liver output or intake; everything above the zero line is output of sugar. As one might expect, the liver in this experimental animal was putting out sugar during the control period of the experiment. A large dose of dextrose is given intravenously, and the liver which was putting sugar out into the blood immediately stops doing so and begins to take in large amounts of sugar. During this period the broken line, which is the dextrose tolerance test, goes through its usual curve; it is only when the liver stops taking in sugar and starts to put out sugar again that the dextrose tolerance test returns to its pre-test level.

The time between hours 2 and 3 is a very interesting period. For about an hour the liver neither takes in nor puts out sugar; it is inhibited. It is during this period that you have the hypoglycemic phase of the dextrose tolerance test. In other words, the dip below normal that you get at the end of the dextrose tolerance curve is due to the fact that you have stopped the liver from putting out sugar and it takes about an hour for it to start again; during that period the blood sugar falls a little below the normal level.

I like to describe this regulating mechanism in simple terms with which we are all familiar. It is analogous to the thermostat-furnace arrangement which many of you use to heat your homes. It is just as simple as that. You set your thermostat to regulate your home at, say, 70° F. The trigger which activates the regulating mechanism is the temperature of the room. When the temperature rises above 70° F. the thermostat clicks over and your furnace stops putting out heat; then, when the temperature of the room (because no more heat is coming) falls below 70 degrees, the thermostat clicks back and your furnace starts supplying heat again. That is exactly what the liver does as far as blood sugar is concerned. The blood sugar itself is the stimulus to regulation. When the blood sugar rises above the usual normal level it inhibits the liver from pouring out more sugar, so that in effect you are substituting the sugar you put into the gastrointestinal tract for the sugar which the liver was supplying to the blood. Then as soon as that sugar is used up and the blood sugar begins to fall a few milligrams per cent below the original level, the liver starts pouring sugar into the blood again.

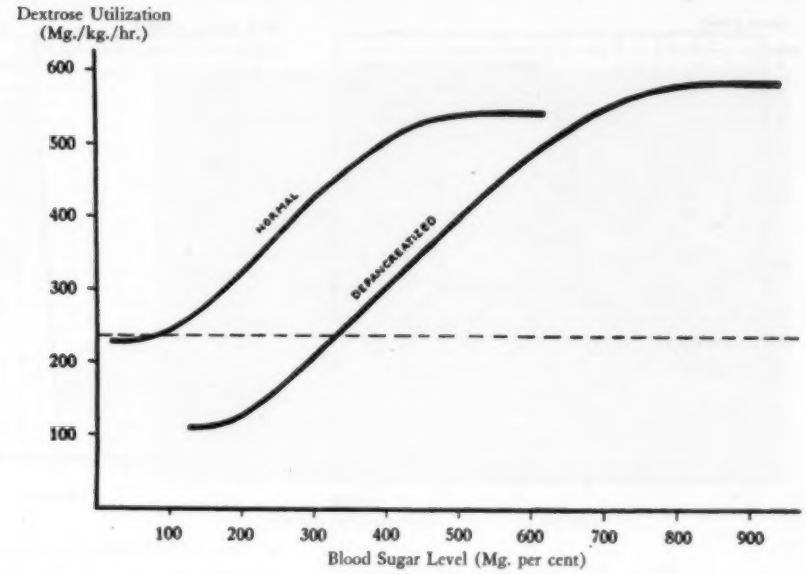

FIGURE 2.

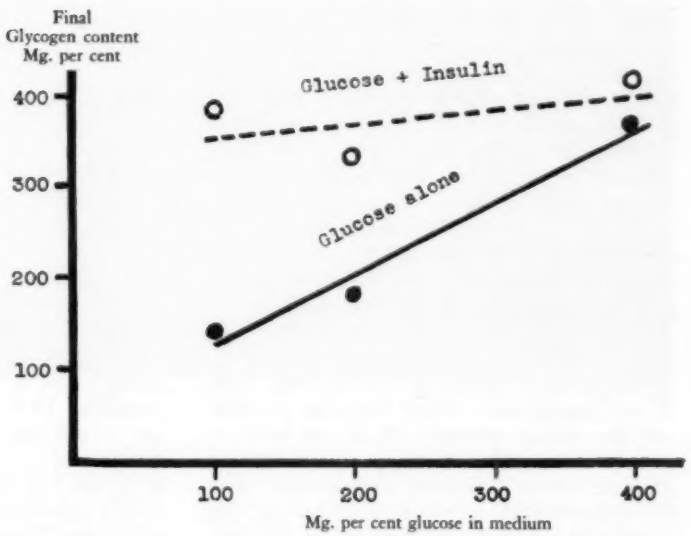

FIGURE 3.

This is a useful conception because it enables us to view the hormones in their proper relationships to the regulatory mechanism, for you know that certain hormones—especially insulin, anterior pituitary, adrenal cortex and thyroid—do affect the blood sugar level. What part do they play in this mechanism? To make a rather long story short, the hormones act to set the level of the regulating mechanism. They are like the springs on the thermostat in your living room. When the hormones are properly balanced, the hepatic regulatory mechanism is set to regulate at your normal blood sugar; when you remove insulin or add insulin, it changes the level at which the regulating mechanism is set, just as you can go into your living room and set your furnace to regulate at 80° F. or at 60 degrees by adjusting the thermostat.

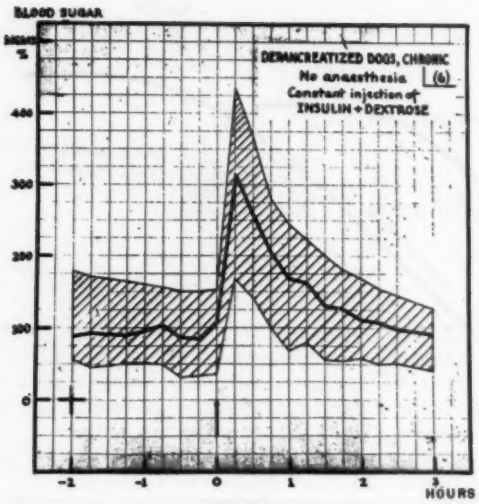

FIGURE 4.

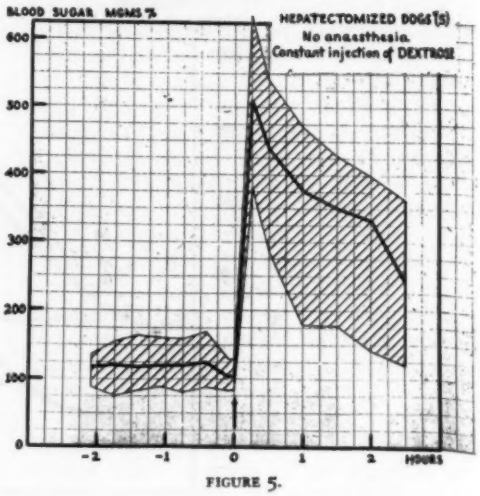

FIGURE 5.

It is clear from this conception that, although you can change the blood sugar level with hormones, they do not really change the operation of the regulating mechanism. Your thermostat and furnace go through the same maneuvers whether they are set at 60 degrees or 70 degrees or 80 degrees. In the same way, an excess or a deficiency of insulin or of one of the other pertinent hormones does not change the fundamental characteristics of the dextrose tolerance test; these factors merely make it operate at a different level. This is not just theoretical speculation; we showed it in our own laboratories, some years ago, in a simple experiment.

The curves in Figure 7 were obtained from an animal from which both the pancreas and the anterior pituitary gland had been removed—the so-called Houssay animal, named after the South American experimenter who first prepared such an experimental animal. Let me remind you of the well established fact that, in the absence of the pituitary gland, the blood sugar level cannot be maintained unless food is constantly available to the animal. Hence the Houssay animal presents a very interesting sort of experimental diabetes: when well fed it is diabetic, but you can have any blood sugar you like in that animal simply by underfeeding or withholding food.

Prior to curve A of Figure 7, this Houssay animal was well fed and maintained blood sugar at the characteristically diabetic level of 350 to 400 mg. per cent. At that diabetic level he presented a perfectly normal dextrose tolerance test—in the complete absence of insulin and in the complete absence of the anterior pituitary hormones. Before the test which resulted in curve B was performed, the same animal was fasted until his blood sugar level came down to what is considered the usual normal range. When a dextrose tolerance test was done at the normal range, he gave a curve that looked very much like a severe diabetic curve.

At first glance this seems rather peculiar—obtaining a diabetic type of curve when you start off at a normal blood sugar level, and a normal curve when you start off at the diabetic blood sugar level. But in terms of the analogy which I have described to you, it is quite understandable. This animal's regulation was set at 350 to 400 mg. per cent (that is where the "thermostat" on his "furnace" was set) so that he did not begin to regulate his blood sugar level until it approached 350 mg. per cent. When he was starved down to 100 mg. per cent before the dextrose tolerance test was done, his blood sugar had to rise to his regulating threshold before the mechanism clicked over, and from that point on he gave a normal curve.

Curve C of Figure 7 was obtained in a subsequent test on the same animal, after full feeding and a return of his blood sugar level to the diabetic range. At this time he again gave a normal dextrose tolerance curve, showing that the period of fasting had not made any real or per-

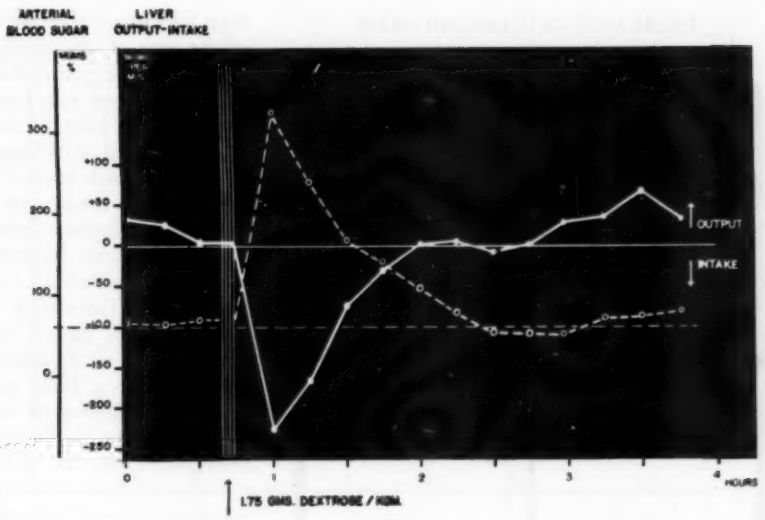

FIGURE 6.

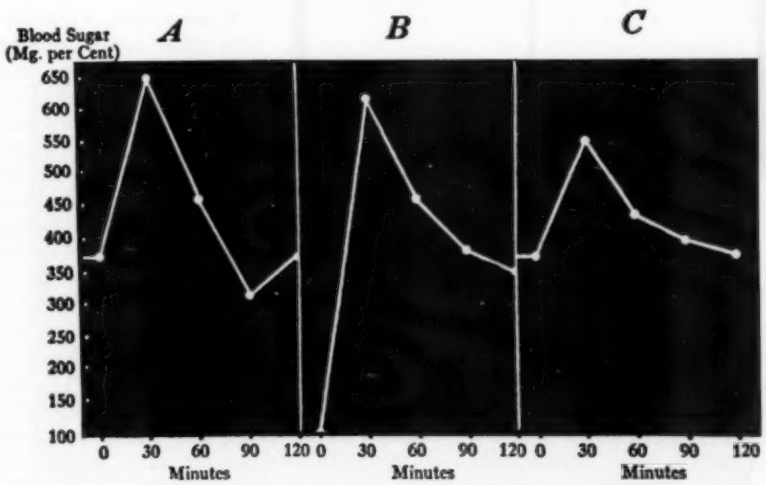

FIGURE 7.

manent change in his threshold of regulation.

It is clear, therefore, that the normal dextrose tolerance curve (or the blood sugar-regulating mechanism of which it is an index) does not depend upon the presence of the hormones. It can operate in the complete absence of the hormones. The hormones merely determine at what level regulation will occur. Actually, the fact that you have a normal blood sugar level of 60 to 80 mg. per cent depends upon the particular balance which the endocrine glands maintain in our species, man. It is not the same in all species; it is somewhat different in birds, for instance.

In Figure 8 I have portrayed the endocrine balance in another simple mechanical analogy. The liver is represented as a weight suspended by springs from a rigid frame. A spring representing the pancreas pulls it down, and another representing the anterior pituitary pulls it up. To represent the dependency of the thyroid and the adrenal cortex on the anterior pituitary, I have drawn them as forces acting in the same direction as the anterior pituitary but dependent upon it. The two main forces are the anterior pituitary and the pancreas. When these forces are equal and opposite the regulating level is at its normal range—60 to 80 mg. per cent. An

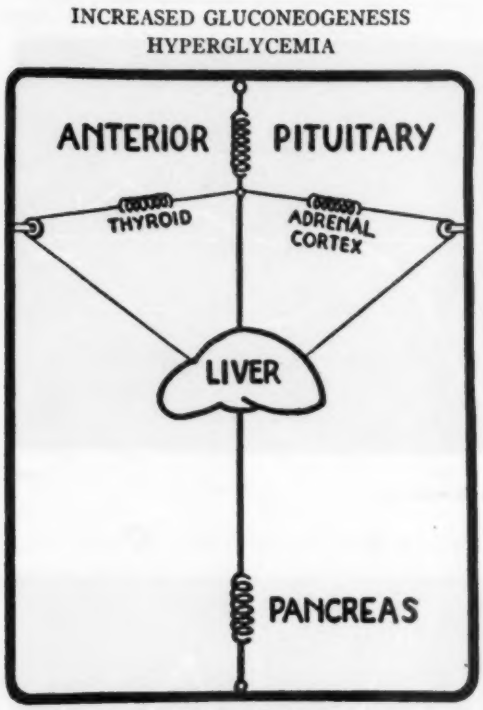

FIGURE 8.

increase in the amount of insulin or a decrease in the amount of pituitary (hypopituitarism) will lead to hypoglycemia. A decrease in the amount of the pancreatic hormone or an increase in the amount of anterior pituitary activity will lead to hyperglycemia. It is by this balance of forces that the level of regulation is set. It is also evident from this point of view that "diabetes" on the one hand, and "spontaneous hypoglycemia" on the other hand are not etiologic entities, but rather are clinical syndromes of varied etiology.

WHY have not these facts which I have outlined been more evident to the clinician, when they have been fairly clear for a long time from experimental work? I believe that one reason is that, for clinical purposes, the dextrose tolerance test is usually done by giving the test dose of sugar by mouth. Under these circumstances the shape and significance of the dextrose tolerance curve are obscured by variations in the rate of absorption of the administered sugar from the gastrointestinal tract. When you do oral dextrose tolerance tests, the curves are very variable even in the same normal individual repeated at different times. If you do not believe that, pick yourself a willing subject and try it several times, and see how closely you can get the dextrose tolerance curves to coincide in the same individual under apparently the same conditions. The variability is even greater when the subject is not trained—that is, in the average patient who requires an occasional test. In such patients a slight fear of the procedure, or a little nausea from the large amount of rather poor lemonade that most of us make up for the purpose, is enough to delay absorption from the gastrointestinal tract and give you a flat curve which completely obscures the significance of the test.

Furthermore, while the endocrines do have a real effect on the threshold of hepatic regulation, they also have an effect on the rate of absorption from the gastrointestinal tract, and this effect on absorption tends to obscure the effect of the hormone on the regulating process in the liver. You are well aware of the fact that the anterior pituitary and thyroid both increase the rate of gastrointestinal absorption, and that the lack of these hormones leads to decreased gastrointestinal absorption. Yet despite these facts you find in the medical literature repeated references to the flat curve that you get in hypopituitarism, as indicating an increased utilization of carbohydrate. This is simply not so. The flat curve of the oral dextrose tolerance test in hypopituitarism indicates only that the sugar is absorbed very slowly from the gastrointestinal tract. When the test dose of sugar is administered intravenously to hypopituitary patients, they yield quite normal curves. Incidentally this is one circumstance in which the oral dextrose tolerance curve may be useful provided that you compare it with the intravenous curve in the same patient.

Clinicians also have tended to ignore the role of the liver. It has been known clinically for a long time that liver disease will alter the dextrose tolerance test. In spite of this, however, they often interpret high curves or low curves, normal curves or diabetic curves, without reference to the functional state of the liver. I should like to describe an experiment which demonstrates that liver dysfunction can affect the dex-

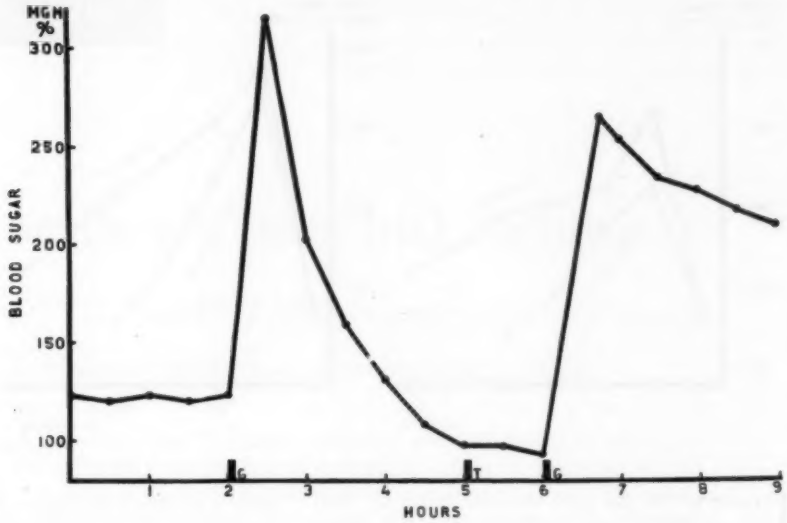

FIGURE 9.

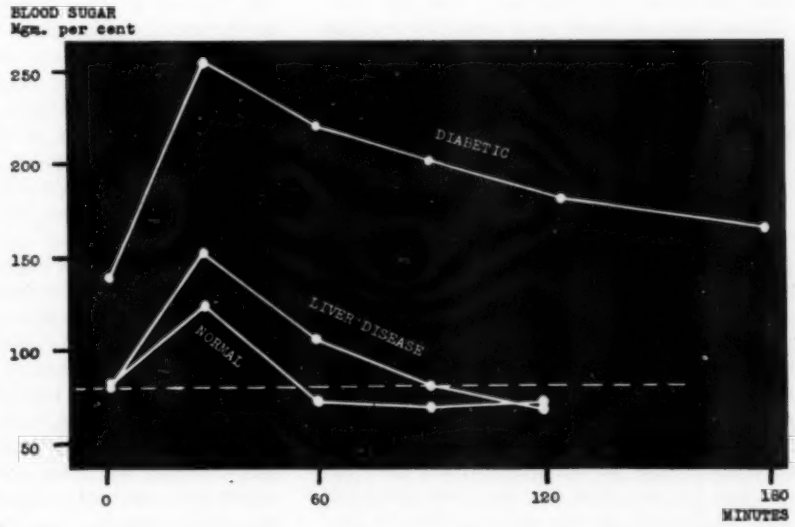

FIGURE 10.

trose tolerance test, even when the pancreas is absent and there is no possibility of any variation in the amount of available insulin.

Figure 9 depicts one of those constant injection experiments I previously described, where you remove the pancreas of an animal and give him a constant injection of insulin to maintain a constant blood sugar level (in this case it wasn't quite normal, about 125 mg. per cent, but it was close enough to normal for the purpose). You see how nicely the constant blood sugar level is maintained by his artificial pancreas during the two hour control period. Then a test dose of glucose is given and you get a smart normal response for this type of intravenous test. Then diphtheria toxin, a known hepatotoxic agent, is given (at point T). An hour later the glucose tolerance test is repeated, and this time you get a markedly diabetic curve. It is clear that one cannot ignore the state of the liver in the interpretation of the dextrose tolerance test.

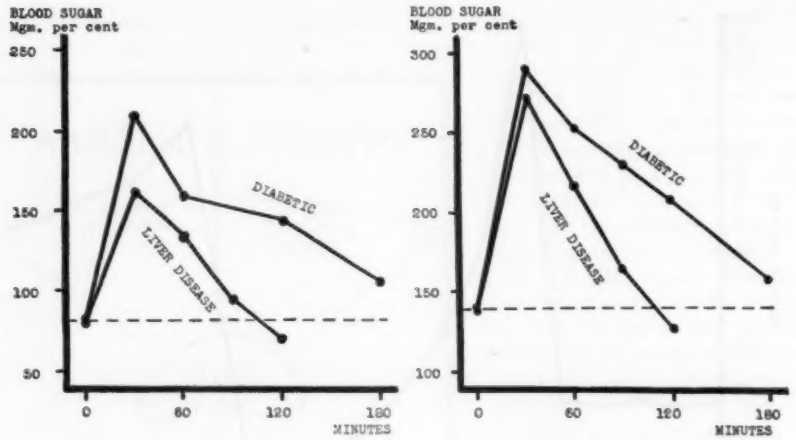

FIGURE 11.

I BELIEVE that the oral dextrose tolerance test as ordinarily used and interpreted is practically worthless. It is true that it will give you a diabetic type of curve in a moderate-to-severe diabetic, but in those individuals a simple fasting blood sugar level will tell you just as much. In the milder diabetics the curve is so variable that it is not worth doing. I favor the use of the intravenous test to avoid the variable factor of intestinal absorption. I give 1/3 gm. of glucose per kilogram of body weight in 50 per cent solution (that is, just as it comes from the ampule) intravenously, and inject that amount within three to five minutes.

Figure 10 shows the average curves one gets in such tests. The normal curve is back to its original pre-test level within 60 minutes. The diabetic curve is not back within 120 minutes, and the average diabetic curve is not back even within 180 minutes. The curve of liver disease takes more than 60 minutes and less than 120 minutes. Let me point out that these standards were established on the mildest diabetics that we could find. None of them required insulin for control, and none of them had over a 200 mg. per cent fasting blood sugar. Similarly, the liver curve is based on the mildest cases of liver disease we could diagnose and be sure of. They were clinically diagnosed and corroborated by laboratory tests. Thus, with the intravenous dextrose tolerance test, one can distinguish between even the mildest diabetes and the mildest liver disease.

You will notice, of course, that the initial blood sugar level of the *average* curve for diabetes is significantly higher than the initial blood sugar level of the *average* curve for liver disease. Because of this you might say, "Well, why do the test? . . . You can tell the difference between diabetes and liver disease by the initial blood sugar level." But that is not so; it appears to be so only because Figure 10 presents average curves. Actually many mildly diabetic individuals have normal fasting blood sugar levels, while many individuals suffering from mild or early liver disease have definitely elevated fasting blood sugar levels.

Figure 11 compares individual curves which happened to start at the same blood sugar level. In one pair both the liver disease patient and the diabetic started at a perfectly normal blood sugar level, 80 mg. per cent, and yet it was very easy to distinguish the liver disease from the diabetic. In the other pair, both cases started at the same high level. You might have called them both diabetic, but again it is obvious from the curves that one was a diabetic while the other was a mild hepatitis.

It is a matter of some importance to distinguish between mild liver disease and diabetes, because if you treat a liver disease with restricted carbohydrate and insulin, you will make him worse. I believe there are many patients under long-continued treatment for diabetes who had liver disease to begin with. On the other hand, if you watch for these patients who may have a little sugar in the urine and a moderately elevated blood sugar level, and if you can distinguish them as liver disease and treat them as such, they will become quite symptom-free.

Diagnostic Clinic

Nonallergic Bronchial Asthma

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Although the theory that bronchial asthma is a manifestation of allergy is often true, there are many patients with asthma in whom no allergen can be identified as the cause of paroxysms. This paper discusses methods of differentiating between allergic and nonallergic asthma and offers procedures to be followed in treating the latter type of the disease.

I SHOULD like to begin by presenting a patient who represents nonallergic asthma. He is 56 years of age and came to the hospital the first time in June 1950 with chills and fever.

His family history is quite negative for any allergic situation. His past history is likewise negative for anything that is relevant to his present condition, other than the fact that he has had sinus trouble for some years.

Last June he developed chills, fever and malaise and entered the hospital where it was found that he had atypical pneumonia. He was treated properly and left.

One month later he again developed fever. This time he had cough and upper respiratory tract infection. He came to the hospital again and there, for the first time, it was noticed that he was wheezing. Physical examination revealed not only the musical rales of asthma but also the moist rales of bronchitis. He was considered, therefore, to have asthma with bronchitis. He was treated for his infection and for his asthma, and he left relieved.

He re-entered the hospital early in November when suddenly he developed severe bronchial asthma, again associated with mild bronchial infection. In the hospital it was found on physical signs that he had very severe asthma. He had little fever or leukocytosis, and after a rather extensive study it was found that he had emphysema. Skin tests to many conventional allergens were all negative; those to bacteria were positive. He was treated intensively with antiasthmatic drugs and with antibiotics and he is now much better.

The second patient is a man of 59. His story is somewhat different in that his mother and one sister had bronchial asthma. Thirty years ago, at the age of 29, he developed his first attack of asthma, and during the last 20 years this has been continuous; that is, he has had it every year. Sometimes it has been extremely severe, other times not. He has been able to work as a barber, but throughout all this time his asthma certainly has not been relieved. Skin tests were completely unrevealing, and he came to the hospital this time in order to try ACTH.

These two cases, then, represent so-called nonallergic asthma.

The popular conception that bronchial asthma is a manifestation of allergy is deep rooted and of long standing. There is little question of the correctness of this theory in many instances. During the past several years, however, it has come to be realized that there are many patients

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with asthma in whom no allergen can be identified as the cause of paroxysms. By allergen is meant food, pollen or dust that is directly responsible for symptoms.

The introduction of the probability of a nonallergic asthma met with skepticism on the part of many allergists who demanded proof of its existence. The only proof that could be offered was a series of patients with severe typical bronchial asthma who were excluded from causative environmental factors. They were incarcerated in rooms with washed air, stripped of dust-producing materials and given a diet of but a few foods. On such a regimen the great majority of uncomplicated allergic asthmatics are promptly relieved. None of the patients in question improved. It was contended that precautions were not strict enough, and there still are allergists today who do not recognize the existence of nonallergic asthma, but its acceptance is becoming general.

The distinction between allergic and nonallergic asthma is of far greater importance than mere academic interest. Given a patient with the latter, no amount of environmental or dietary control will be of real benefit, and, vice versa, an allergic asthmatic who is considered nonallergic will lose the decided help that comes from proper allergic management. With any asthmatic it becomes essential, therefore, to make the distinction between the two. This is by no means always simple, for the two types closely resemble each other.

Perhaps the first step is to be assured that the patient has true bronchial asthma, for there are simulating disorders such as the wheezing of chronic bronchitis, paroxysmal cardiac dyspnea and the localized distant stridor caused by bronchogenic carcinoma. The true diagnosis is made by examining the sputum. A specimen coughed up consists of tough sticky mucus which, if shaken up vigorously in physiologic saline solution, will fragment into many small strands and spirals; when one of the latter is spread on a glass slide and stained with eosin, and then with methylene blue—each in methyl alcohol—myriads of eosinophils will appear. These are the hallmark of true bronchial asthma, for, other than tropical eosinophilia and Loeffler's syndrome—each very uncommon—nothing else will give this picture. In cases complicated by bronchial infection, both eosinophils and pus cells as well as bacteria will be seen. In chronic bronchitis there will be few if any eosinophils; instead there will be mostly pus and bacteria.

Given, then, a patient with eosinophilic asthma, the distinction between the allergic and nonallergic types may be suggested by the criteria listed in Table 1.

Of the differential criteria presented, perhaps the most significant is the age of onset. Asthma beginning in childhood is always allergic—with few exceptions. The same is true for the second decade and largely for the third. Except for the asthma that complicates hay fever, attacks appearing for the first time between the ages of 30 and 40 may be of either type. Then the probabilities of nonallergic asthma increase so that its first appearance after the age of 40 years is much less likely to be allergic. After the age of 50 years the onset of allergic asthma is quite uncommon.

Difficulty in distinguishing between the two types is due mainly to three factors. The first is a definite history of hay fever or asthma in early decades—as represented by the second case—or, after a free interval of many years, asthma may return and thus again be regarded as allergic. A considerable number of these patients have lost their hypersensitiveness to the

TABLE 1
DISTINCTIONS BETWEEN ALLERGIC AND NONALLERGIC ASTHMA

Factor	*Allergic*	*Nonallergic*
Family or past history of allergy	Usually present	Usually absent
Presence of significant skin reactions	Usually present	Absent
Reagins in the blood	Usually present	Absent
Response to anti-allergic regimen	Usually good	Poor
Age of onset	Usually early decades	Middle and later decades
Presence of intractable asthma	Infrequent	Frequent
Complications	Chronic bronchitis Emphysema	Chronic bronchitis Emphysema Myocardial damage Periarteritis nodosa
Prognosis	Good	Uncertain
Mortality	1 per cent	8 to 10 per cent

usual allergens, and treatment along the lines of environmental control fails; yet the fact that the patient was known to have been definitely allergic to a specific food or pollen at one time leads to a persistence in identifying such an individual as one still possessing true hypersensitiveness. It therefore becomes important to realize that there may be a change from the allergic to the nonallergic type, but the reverse is almost never true.

The second difficulty that may confuse the picture is the presence of positive skin reactions. It is now well established that such reactions may have no immediate clinical significance, as testified by the fact that many individuals without allergic background or symptoms will react positively on routine skin testing. It must not be implied that any such reaction should be disregarded. Each should be examined either by eliminating the corresponding substance from the patient's diet or environment or by deliberately exposing him to it. If neither has influence on asthmatic symptoms, the reaction may be regarded as irrelevant; this is the case with nonallergic asthma.

The third difficulty is the concomitant vasomotor rhinitis which frequently is associated with nonallergic asthma. This association is so common in allergy that its presence has led to the assumption that both are expressions of true hypersensitiveness. The seeming fallacy of such reasoning resides in the fact that vasomotor rhinitis and also chronic urticaria may follow a pattern similar to that of nonallergic asthma when its onset is in the later decades. This is by no means true of all cases, but the situation is not uncommon. In these instances, the inability to identify a given allergen as the cause, the intractability of symptoms and the appearance of symptoms in middle life or later strongly suggest a nonallergic aspect to these disorders; hence, the simultaneous appearance of vasomotor rhinitis and bronchial asthma need not imply true allergy.

With these three difficulties reconciled, the distinctions between the two types appearing in Table 1 may be more easily understood.

WHEREAS the cause of allergic asthma is apparent, that of nonallergic asthma is not. This is not remarkable in view of the fact that the immunologic and disturbed physiologic mechanisms that underlie allergic asthma are largely unknown. As more facts bearing on this problem become slowly revealed, the more apparent our ignorance becomes.

We do know that true allergy is mediated by an immunologic process wherein the allergen at fault gradually induces the formation of specific antibody within the affected tissues. Neither antigen nor antibody is in itself harmful, but when one comes in contact with the other, some substances that cause symptoms are released from contiguous tissue cells. Thus, in a patient who has allergic asthma on contact with ragweed pollen, antibodies to this antigen reside in the bronchial mucosa. During the hay fever season when inhaled pollen reaches the bronchi and the antigen contacts its antibody there, an unknown substance—probably acetylcholine—appears and this causes increased secretion of mucus and also causes bronchial spasm—the lesions of asthma. In hay fever, histamine seems

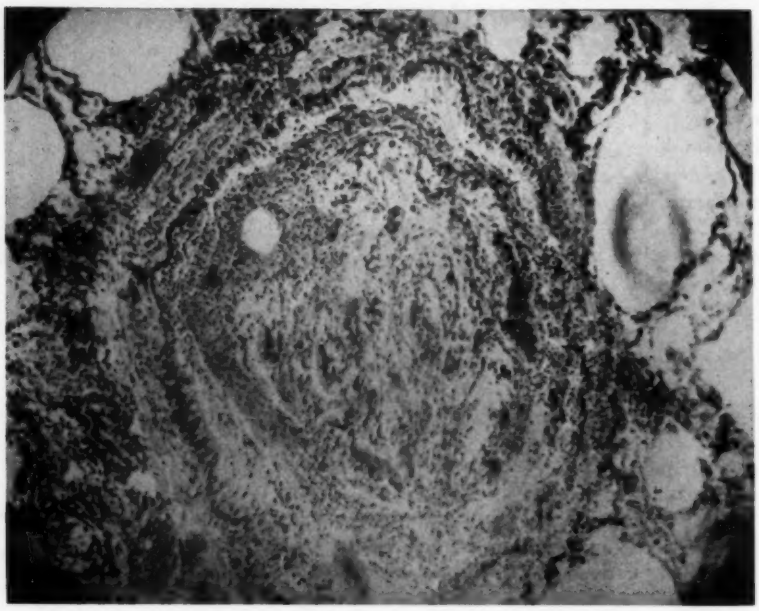

FIGURE 1. Small bronchiole almost completely occluded by mucus.

to be the substance that activates that lesion, and in periarteritis from drug hypersensitiveness something akin to allylamine appears. Little is understood about the mechanisms by which these tissue substances are released, although it is known that histamine, for instance, appears in the blood stream under several circumstances other than that of antigen-antibody contact. Doubtless, acetylcholine too—which mediates vagus stimulation—is released in the bronchi by more than one mechanism and thus induces asthma. The control of specific enzymes on these released substances and the role of eosinophilia are likewise unknown; until they are, the continuing insistence by some allergists that all cases of bronchial asthma are allergic in the conventional sense lacks validity.

Nonallergic asthma is termed "infectious asthma" by some since in many instances the upper or lower respiratory tract is acutely or chronically infected. One may take some exception to this term because in patients with allergic asthma there may be a superimposed infection. Moreover, in some patients with nonallergic asthma there is no sign of infection. The contention that nonallergic asthma is due to allergy to bacterial products remains without proof. Positive skin reactions to bacteria can be duplicated in many healthy individuals.

We are thus confronted with a situation wherein we know neither the cause nor the mechanism that induces this type of asthma. The seriousness of the problem is reflected by several facts. The incidence is fairly high. Many cases are severe and the majority of patients with status asthmaticus or intractable asthma fall into this group, although one finds similar patients with allergic asthma who are not properly treated. Since those in the middle or later decades of life are particularly affected, emphysema occurs much more readily than in younger allergic patients; chronic infection does not seem so readily resisted; cor pulmonale and, in very severe cases, polyarteritis are other complications. The facts that almost all but accidental deaths occur in nonallergic asthmatics, and that the death rate is substantial, testify to the seriousness of these cases.

Treatment consists, first, in recognition. Frequently such patients are treated with antiallergic regimens which include series of restricted diets which take weeks to work out. The persistent failure of such programs leads to increasing discouragement and even not infrequently to some degree of malnutrition. Second, it is important to visualize the lesion. In these cases there is overproduction of thick, tough, sticky mucus by the mucous glands in the

bronchial wall. This may fill areas of the bronchial lumen and cause complete obstruction. The circular smooth muscle of the bronchi contracts and further narrows the affected airway. Edema of the mucosa adds to bronchial narrowing. This process occurs in bronchioles of small caliber, some of 2 to 5 mm. outside diameter. This impediment to breathing causes the signs and symptoms of asthma (Figure 1).

Treatment of these lesions should be adequate. The most important is to remove the mucus which is the principal lesion. To do so, it becomes necessary to lessen its viscosity and this may be done successfully by generous doses of potassium iodide, a most effective drug for this purpose. Two or three grams a day for the first few days usually suffices. Release of bronchospasm by epinephrine, ephedrine, and aminophylline given intravenously or rectally will permit the thinned-out mucus to be coughed up. Mucosal edema is the least important factor for which an antihistamine drug may be used. It should be emphasized, however, that such drugs alone—although effective in hay fever, urticaria and other edematous lesions—have little influence on asthmatic paroxysms excepting, perhaps, mild wheezing in children.

Under such symptomatic treatment, which has variations to meet particular circumstances, most cases of nonallergic asthma will probably improve for here one is not concerned about exposure to allergic factors. Since many of these patients have secondary bronchial infection, this should be treated adequately at the same time that symptomatic treatment is instituted because pus obstructs the bronchioles still further. Once the airways are freed from obstruction, asthma ceases. In many instances the underlying factors continue to operate, but potassium iodide and ephedrine compounds taken once or twice a day usually keep the patient comfortable unless infection or other unknown circumstances occur to induce again an acute attack. Many patients once relieved may require no medication, but recurrence is not infrequent. By such symptomatic therapy many patients can be made free from severe asthma and may remain so. Not only does such treatment give relief, but—more important—it prevents serious complications.

Considerable interest has been displayed regarding emotional factors in asthma. There seems little doubt that these play a role, as indicated by the fact that where anti-asthmatic drugs are no longer effective in status asthmaticus, they become so once the patient is obtunded. This may require large doses of sedatives. Apparently discouragement, inability to sleep and fear of death keep the patient extremely tense, and only when the patient can be relaxed is the spell broken. By the same token, some nonallergic asthmatics between attacks fear recurrences and are discouraged over the fact that no permanent cure is assured. In some cases reassurance becomes important therapy.

To sum up, nonallergic asthma which during paroxysms completely simulates the truly allergic type is the common expression of this disease in the middle and later decades of life. It is by far the more serious in that most cases of intractable asthma fall into this group, and it is responsible for most of the deaths. The cause is unknown and treatment wholly symptomatic.

Diagnostic Clinic

Lesions of the Sigmoid and Rectum

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Carcinoma is the most frequent lesion found in the sigmoid colon and rectum; its early discovery is possible if, in the presence of bowel symptoms, rectal, sigmoidoscopic and radiographic examinations are immediately carried out. Radical operation, preferably abdominoperineal resection, should result in a five year curability rate of approximately 50 per cent. Future improvement in results will depend on the discovery and treatment of the premalignant lesion—the intestinal polyp.

Based on etiology, four different types of lesions are seen in the sigmoid and rectum which I wish to mention briefly, but my main object is to discuss a few points relative to the surgical management of malignant lesions in this portion of the gastrointestinal tract. In doing this I shall try to outline, first, what has been accomplished in the diagnosis and treatment of these lesions; second, what we may be able to accomplish in the future to improve these results, and finally, to submit for your critical review certain surgical procedures now being employed for rectal lesions which need further study.

The four types of lesions involving the rectum and sigmoid are as follows:

1. Congenital lesions among which are imperforate anus, duplication of the bowel and rectovaginal fistula.

2. The traumatic lesions with which many of you have had experience in the recent war.

3. Inflammatory lesions including localized proctitis, chronic ulcerative colitis, lymphogranuloma and diverticulitis.

4. Tumors both benign and malignant.

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Presented at the thirty-fifth (Chicago) annual Assembly of the Interstate Postgraduate Medical Association.

To introduce the discussion on malignant lesions of the sigmoid and rectum we have 3 illustrative cases, brought here through the courtesy of Dr. Walter Maddock.

The first patient, Mrs. M., is 47 years of age. She was admitted to the hospital in October, 1946, stating that she had had no bowel movements for seven days and that she had passed no gas for three days. During this short period she had intermittent cramping pain with generalized distribution and considerable abdominal distention. From the history we learned that she had had bowel symptoms for three years. She had had intermittent rectal bleeding with increasing constipation which required cathartics for satisfactory evacuation. I would like to ask this patient whether she sought medical advice during this long period.

PATIENT: I was under the care of a doctor and he said, "Just let it go; it is piles."

DR. CATTELL: This brings up the first point I would like to make which is placing the responsibility for delay in treatment.

Usually, we as physicians are not as seriously at fault as was the case with this patient. In recent years patients have come to operation earlier than before. In our experience with malignant rectal lesions the average duration of symptoms has decreased from nine to seven

months. Most of the delay is because the patients do not go to their physicians until serious symptoms develop, but there still remains an appreciable delay on our part, as physicians, in submitting patients to rectal and sigmoidoscopic examinations as well as in utilizing the barium enema.

The flat plate of the abdomen, taken at the time of this patient's admission, shows distended loops of small bowel as well as a gas-filled colon. The site of the lesion may be determined by this examination alone when a severe degree of obstruction is present. There should be no hesitancy, however, in giving a small amount of barium by rectum to localize it definitely. Such an examination in this patient showed a constrictive lesion in the midsigmoid colon.

The two common lesions, diverticulitis and carcinoma, which produce these findings must be differentiated. The lesion in this patient was situated too high to reach with the sigmoidoscope. The best means of differentiating the two lesions is by radiographic studies. When the lower bowel is seen to be quite flexible up to the point of the lesion, the diagnosis of carcinoma can be made. This differentiation should always be made, if possible, previous to operation, since the findings at exploratory operation in the absence of metastases do not permit one to differentiate the two conditions.

Another point which is well illustrated by this case history is the management of obstruction. A Miller-Abbott tube was introduced and satisfactory decompression of the small intestine accomplished. Decompression of the small intestine should be accomplished within 48 hours and no attempt should be made to pass the tube into the colon. Frequently after this decompression the lesion may open sufficiently to evacuate the colon. If the lesion is situated low down a tube may sometimes be passed through the lesion, guiding it through the sigmoidoscope. If satisfactory decompression is not accomplished by these means after 48 hours, a preliminary proximal drainage of the colon should be done. We prefer cecostomy for this purpose, bringing out a third of the circumference of the amesenteric edge of the ascending colon above the level of the skin. Immediate tube decompression is done, following which the exposed bowel is opened widely within 48 hours. Should complete diversion be preferred for a lesion of the left colon, we utilize a spur colostomy in the right half of the transverse colon. Following irrigation of the colon, resection can usually be done within 7 to 10 days.

RICHARD B. CATTELL

Approximately 5 per cent of patients with carcinoma of the sigmoid and rectum require preliminary surgical drainage. The majority of patients without obstruction can be prepared for operation in a short period of from two to five days. In the routine case a single large dose of magnesium sulfate or castor oil is given, followed by colonic irrigations twice daily. During this preparatory period an antibiotic drug, either SULFATHALIDINE® or streptomycin, is given. The latter is given in 0.5 gm. doses twice a day.

This patient had a resection of the sigmoid colon with end to end anastomosis. The resected specimen was reported to contain a partially differentiated adenocarcinoma with pericolic fat extension and lymph node involvement. She has remained well for four years, with no evidence of recurrence.

The condition of all patients who have had resection of the colon or rectum should be determined at regular intervals after operation. If recurrence takes place, it usually does so within

the first three-year period after operation. The follow-up examination should include not only the search for local recurrence or an enlarging liver but also sigmoidoscopic examination and barium enema to exclude the presence of a new lesion. As reported by my associate, Dr. Neil W. Swinton, 25 per cent of our resected specimens showed the presence of polyps as well as the primary lesion and in 6 per cent of patients who had resections, a second lesion developed. This emphasizes the point that the patient who has had one carcinoma of the large intestine has a greater chance of developing a second carcinoma than a patient who has had no previous colonic lesion.

Until 1945 most of the patients who had lesions of the left colon operated on in our clinic were submitted to a two-stage modified Mikulicz type of resection. Since that time we have favored primary resection with end to end anastomosis, as employed in this case. Primary resection has been utilized without an increase in mortality because of better preoperative preparation and the use of antibiotic agents.

The second patient presents the problem of a lesion in the rectosigmoid, in that portion of the bowel just above the pelvic-peritoneal reflection. She had complained of rectal bleeding of a year's duration. During this period she had noted some change in bowel function and had had one short episode of nausea and vomiting, with abdominal cramps. She, like the first patient, had had protruding hemorrhoids. In an earlier series of cases which we analyzed we found that 15 per cent of the patients with malignant lesions had had an anorectal operation as, for instance, hemorrhoidectomy, within a period of six months of their resection, while in an additional 16 per cent a diagnosis of some anorectal condition had been made and the condition treated by measures other than operation. Thus, it can be seen that nearly one third of patients who have neoplastic lesions have been submitted to treatment of anorectal conditions without the underlying malignant condition being recognized.

This failure to make a correct diagnosis early in the observation of the patient is fully the responsibility of us as physicians. In order to avoid such an error, it should be stated unequivocally that before any treatment is instituted for an anorectal condition in an adult, sigmoidoscopic examination should be done, and usually a barium enema given as well.

Not only must sigmoidoscopic examination be done, but one must be certain that the bowel is adequately prepared. I have a patient in the hospital at present who has had two sigmoidoscopic examinations performed without preparation, and both times the sigmoidoscope was passed by a malignant lesion that had been present for over a year, based on the symptoms presented. Sigmoidoscopy should be done after thorough preparation of the bowel by a purge and cleansing enema. It is only by this means that the smaller benign lesions in the form of mucosal polyps will be seen.

Without question, most malignancies of the sigmoid and rectum arise from a preexisting benign polyp. Since, in our experience, over two thirds of patients having mucosal polyps do not have any symptoms and do not have bleeding, our only means of their discovery is by sigmoidoscopic examination. At least 3 per cent of you sitting in this audience have mucosal polyps. The figure is actually higher than that because in later decades the incidence is higher. The fact that these premalignant lesions, when discovered, can be easily destroyed by fulguration through the sigmoidoscope, performed as an office procedure without anesthesia, should emphasize the necessity for more frequent sigmoidoscopic examinations. The routine employment of this examination in adults having complete physical examination offers the best means of reducing the incidence of carcinoma of the sigmoid and rectum.

Each of the 3 patients demonstrated in this clinic was operated on under spinal anesthesia. This is the anesthesia of choice in our clinic as well, and without question it provides the best possible relaxation as well as contraction of the small intestine to make exposure as easy as possible.

In this patient the lesion was demonstrated by means of the barium enema. All lesions in the rectum and rectosigmoid are within the reach of the sigmoidoscope. If the lesion is visualized, a satisfactory diagnosis can be established by this means alone. Whether biopsy should be done routinely is largely a question to be decided by the individual examiner. A positive diagnosis of adenocarcinoma by biopsy, however, is always reassuring in planning operation. The policy of always preceding a barium enema by sigmoidoscopic examination should

be universally adopted. Unfortunately, if bowel symptoms are present, too often the patient is sent to the roentgenologist for a barium enema without rectal examination or sigmoidoscopy. The roentgenologist can help greatly in this problem if he refuses to do the barium enema until the sigmoidoscopy has been reported.

This second case in which the lesion was situated just above the pelvic-peritoneal reflection brings up the present difference of opinion among experienced surgeons as to the type of operative procedure that should be employed. If an anterior resection is done—as in this case—a low anastomosis must be made, with division of the superior hemorrhoidal vessels and complete excision of the mesentery. It may be necessary to divide the middle hemorrhoidal vessels as well and make the anastomosis in the low rectal segment. In our clinic we utilize abdominoperineal resection for all lesions in this location unless the operation is palliative because of the presence of liver metastases. In this patient, Dr. Maddock thought that the lesion was quite favorable since there was no local extension and no evidence of metastases, and his judgment was vindicated by the report of the pathologist. From follow-up studies on our patients we have found that if the lesion does not extend beyond the primary site, 90 per cent of all who have resections with this favorable finding survive for five years or more. This patient has no evidence of recurrence over a three-year period, and has had an excellent result.

Unfortunately, we are unable to determine with any reasonable degree of certainty that the lesion has not extended, based on findings at exploratory operation. It is for this reason that we choose to do an abdominoperineal resection since over half of all the lesions resected show extension beyond the primary site. There is no question that low anterior resection with anastomosis can now be done with relatively few complications and low mortality. Excellent results following this operation have been reported by a number of surgeons, particularly Dixon. In our own experience we have a higher rate of recurrence following this operation, even when it is applied to the more favorable cases. This fact, combined with our inability to determine that the lesion is confined to its primary site, leads us to accept abdominoperineal resection for all lesions of the rectosigmoid and rectum, since it is the best operation that can be applied for all cases.

The third patient is 63 years of age and was operated on two years ago. She had had long-standing symptoms of a digestive sort due to an ulcer for which she had been treated since 1938. She had noticed bleeding for only three weeks before her admission two years ago. She had a lesion that was found on the first observation by rectal examination. Actually, in our experience 55 per cent of all malignant lesions seen in the entire large intestine can be felt by this means. No record of the past examinations is available to show whether an earlier sigmoidoscopic examination had been done to determine whether a benign polyp was then present.

In spite of the fact that she had had bleeding of only three weeks' duration, the hemoglobin was 11 gm. and a red blood count was 3,800,000. Proctoscopic examination showed an irregular cauliflower mass, only 3 by 3 cm., which bled on manipulation. Biopsy showed an adenocarcinoma which is characteristic of these lesions. Her short history and the fact that the lesion was only 3 by 3 cm. bring up another point. It probably requires a period of two or three months after malignant degeneration actually begins for a lesion of this type to become ulcerated sufficiently to produce bleeding, so that when an attempt is made to estimate the duration of the lesion, this period must be added to the period during which symptoms were present.

This patient was prepared in the usual fashion but required blood transfusion previous to surgery. An abdominoperineal resection was performed with a permanent end colostomy in the sigmoid colon. The lesion was a grade 2 adenocarcinoma without extension and without invasion of lymph nodes or blood vessels. She has been well for two and one-half years.

There should be little question as to the type of operative procedure to be employed for a lesion in this location and I am sure most surgeons would choose the operation utilized in this patient. The operation of proctosigmoidectomy as employed by Babcock and Bacon has been used extensively for lesions in the rectum. It seems to me that the chance for cure is best when the entire levator ani muscles are sacrificed and if this is done, a competent anal sphincter will not be obtained. Abdominoperineal resection should be employed for all

malignant lesions of the rectum. The management of the permanent colostomy should be a relatively simple matter if we accept our responsibility for the instruction of these patients. I will ask this patient how she manages her colostomy. Questioning her before the clinic I found that she did not do it well.

PATIENT: Well, I don't do a great deal. Once in a while I take an irrigation. In the beginning I took them rather often, but I didn't manage them well. They were very difficult and took a long time. It took about two and a half hours.

DR. CATTELL: I found that she does not wear a colostomy bag but permits the bowel to move freely, utilizing a dressing. I did not disagree with what she is doing because every person must work it out for himself, and I am sure she has been advised to take irrigations.

In the management of the colostomy we find it best for a patient to take an irrigation every second or third evening. With complete evacuation of the bowel there should be no discharge between irrigations. If two and one-half hours are required for an irrigation it is because of one of two reasons: either the colostomy is too tight as it emerges from the abdominal wall, or the patient remains too constipated. Digital dilatations of the colostomy should be done by the patient before each irrigation. This will prevent the inevitable contraction at the skin level on a colostomy irrigation regimen. Dietary control is necessary only during the first one or two months after operation, following which the only restriction is with gas-producing foods or those which the patients do not tolerate well. If the colostomy is irrigated satisfactorily, it can be covered with folded absorbent paper with a small piece of oil silk over it. A light elastic band holds this in place. If the colostomy is adequate, an irrigation should require only 30 to 40 minutes every second or third day. Unless we assume the responsibility to make certain that patients are managing the colostomy in a satisfactory manner their lot may not be as happy as it would be with correct instruction.

We are indebted to these patients for coming here today and wish to thank them. Since they are not now on the platform I would like to mention briefly another problem in dealing with patients with this lesion. I determined in talking to them that each one had been told that she had a tumor and one of them knew that she had a definite carcinoma. I prefer to avoid telling these patients before operation, or in the immediate postoperative period, that they have carcinoma. It greatly increases their concern to know that they have had cancer. Obviously, there are two points of view regarding this matter.

In a general consideration of what can be accomplished with carcinoma of the sigmoid and rectum it can be stated that approximately 50 per cent of all patients submitted to resection, both favorable and unfavorable, can anticipate a five-year relief without recurrence. The percentage of five-year survivals is dependent upon the total percentage of all patients submitted to resection. Thus, if only 60 to 70 per cent have resections, a higher percentage of curability will result, whereas if 90 per cent have resections the percentage figure will drop somewhat. In 1949, of all patients with carcinoma of the sigmoid and rectum operated on in our clinic, 96.4 per cent had their lesions resected. In somewhat less than one-half the lesion was confined to its original site; the remainder were less favorable because of local extension to contiguous organs, involvement of regional lymph nodes, or blood vessel invasion seen in the tumor.

If we are to improve the results following resection for malignant lesions of the lower large intestine we must do it by some other means than by further extending the operative procedure. Furthermore, the operability rate cannot be further extended since at present over 90 per cent of patients are submitted to resection. Our best means of improving the results is in the treatment of the premalignant lesions, or mucosal polyps. As stated earlier, the only means of doing this is by increasing the number of sigmoidoscopic examinations during a complete physical examination. A second means of improving the results is through follow-up examinations of patients previously demonstrated to have either a benign or a malignant lesion. Should symptoms again develop in these patients, a second primary lesion should be sought.

At the present time the outlook is favorable for patients who have carcinoma of the sigmoid and rectum because of the decreasing period of symptoms, higher operability rate, low mortality and 50 per cent curability rate.

Honorable Mention

THE SCIENTIFIC EXHIBIT
AMERICAN MEDICAL ASSOCIATION
ATLANTIC CITY SESSION - 1951

Cortisone*

EXAMPLES FROM ITS THERAPEUTIC SPECTRUM

A. GIBSON, M.D., C. E. LYGHT, M.D., S. FROMER, M.D., L. P. STREAN, PH.D.
MEDICAL DIVISION, MERCK & CO., INC., RAHWAY, NEW JERSEY

CORTISONE, one of a series of crystalline hormonal substances isolated from extracts of the adrenal cortex in 1936 and first synthesized from a bile acid in 1946, was employed clinically for the first time in 1948.

Although cortisone as a therapeutic agent has been used for only three years, its spectrum of usefulness is expanding rapidly to include many diseases heretofore totally or partially unresponsive to other forms of therapy. Likewise, studies with cortisone are enabling clinicians and research scientists to investigate the mechanism of certain processes, both physiologic and pathologic, which previously remained obscure.

The steadily increasing volume of published articles relating to cortisone is tangible evidence of the mounting interest in this new hormonal agent. The scientific exhibit occupying the following pages focuses attention on the enlarging therapeutic horizon now being brought into view by cortisone.

*Cortisone is supplied by MERCK & CO., INC., under the trade-mark name CORTONE.

THERAPY WITH CORTISONE
RESPONSE IN VARIOUS DISEASES

Beneficial Effect Often Dramatic	Results Thus Far Encouraging, But May Be Variable	Transient Beneficial Effects Observed, But Ultimate Prognosis Unaltered
Rheumatoid Arthritis	Dermatomyositis	Acute Leukemia (Lymphocytic or Granulocytic)
Rheumatic Fever	Psoriasis	Chronic Lymphatic Leukemia
Rheumatoid Spondylitis	Retrolental Fibroplasia	Lymphosarcoma
Still's Disease	Agranulocytosis and certain forms of Anemia	Multiple Myeloma
Psoriatic Arthritis	Acute Gouty Arthritis	Hodgkin's Disease
Lupus Erythematosus Disseminatus (Early)	Ulcerative Colitis	
Addison's Disease	Regional Enteritis	
Various Allergies Bronchial Asthma Hay Fever Angioneurotic Edema Drug Sensitization Serum Sickness	Nephrotic Syndrome	
	Pulmonary Granulomatosis	
Inflammatory Eye Diseases	Scleroderma (Early)	
Exfoliative Dermatitis	Periarteritis Nodosa (Early)	
Pemphigus		
Panhypopituitarism		
Adrenogenital Syndrome		

THERAPY WITH CORTISONE
RHEUMATOID ARTHRITIS

Before therapy

After 39 days of therapy with cortisone

- **Cortisone administered orally or intramuscularly in adequate dosage results in prompt diminution of stiffness, then reduction of articular tenderness and pain on motion, followed by decrease in swelling.**

- **Many patients experience complete relief so long as therapy is maintained. Others obtain only a partial remission but display improved muscle strength, appetite, weight, and mental attitude.**

- **Relapses, which may occur following withdrawal of cortisone, are often promptly controlled by re-instituting therapy with this hormone.**

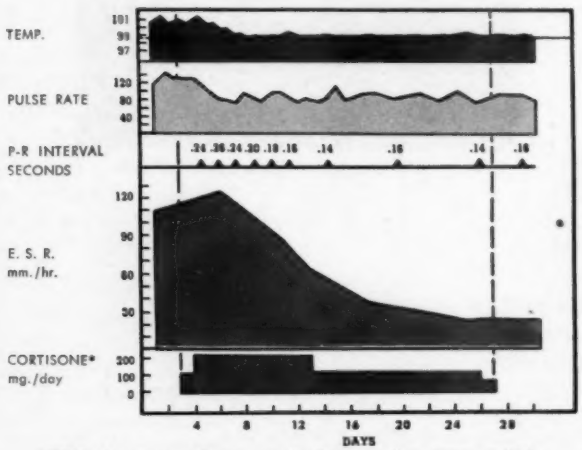
Synovial biopsy before therapy.
Note severe inflammatory reaction.

After 39 days of cortisone treatment.
Cellular reaction has changed to fibrous healing.

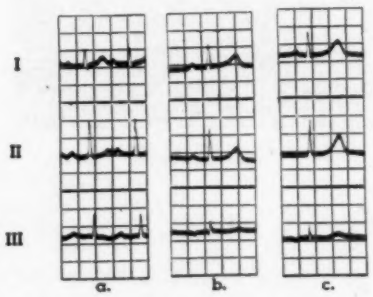
THERAPY WITH CORTISONE
ACUTE RHEUMATIC FEVER

Cortisone has been observed to cause rapid disappearance of polyarthritis, fever and tachycardia, and to correct elevation of the E.S.R., abnormalities in the ECG, and anemia. Evaluation of the ability of cortisone to protect the heart against the damaging effects of carditis will require long-term study.

Female, 15 years: acute rheumatic fever with polyarthritis and carditis 4 days' duration—first attack.



*While the above regimens proved effective in these instances, higher initial, or more prolonged maintenance, dosage is generally more desirable.



a. Admission E C G
P-R interval = 0.24 sec.

b. After 4 days' treatment with cortisone
P-R interval = 0.20 sec.

c. After 8 days' treatment
P-R interval = 0.16 sec.

Female, 16 years: acute rheumatic fever with carditis

Before therapy

At conclusion of 3 weeks' treatment with cortisone

One month later

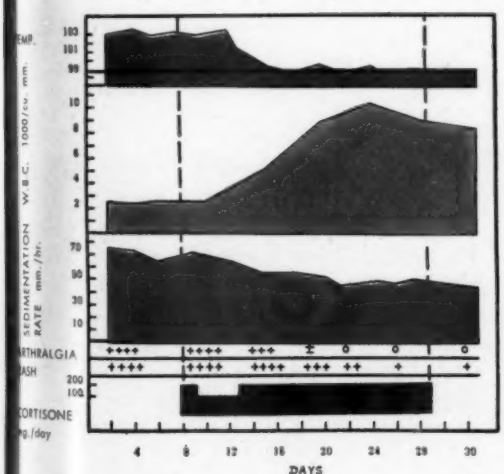
THERAPY WITH CORTISONE

ACUTE DISSEMINATED LUPUS ERYTHEMATOSUS

In this disease the response to therapy with cortisone varies from case to case. In many patients partial to complete remissions have occurred. Disappearance of fever, arthralgia and skin rashes has been observed and normal A/G ratios have been restored. Prevailing evidence suggests that suppression rather than cure of the disease follows cortisone therapy.

← Before therapy

After cortisone treatment →



Female, 18 years, acutely ill 2 weeks; arthralgia several months.

Following cortisone therapy, note: drop in temperature to normal; rise in W.B.C. from 2,000 to normal; reduction in E.S.R.; disappearance of arthralgia; marked reduction in rash.

THERAPY WITH CORTISONE
PSORIATIC ARTHRITIS

Patient, 48 years: psoriasis over a period of 21 years; arthritis for past 6 years. Condition markedly improved with total dosage of 11.75 Gm. cortisone. When dosage was reduced to 100 mg./week (in one dose), erythema and exfoliation returned. With maintenance doses of 100 mg./day and occasional rest periods, condition was held under control.

Before treatment

Improvement of psoriatic lesions following treatment with cortisone

PSORIASIS

Left leg, treated topically with a cortisone ointment (25 mg./Gm.), shows almost complete disappearance of erythema and scaling. Right leg, untreated, shows erythematous and scaly patches.

Photograph Courtesy
C. W. Lloyd, M.D., Syracuse, N. Y.

THERAPY WITH CORTISONE
DERMATOLOGIC CONDITIONS

PEMPHIGUS VULGARIS

Patient first developed superficial buccal and gingival erosions, then large bullous lesions and crusts on trunk and extremities. Slow but steady improvement followed administration of cortisone. The patient regained weight and general good health, and is now able to carry on normal activities.

Before treatment

Following cortisone therapy

GENERALIZED DERMATITIS WITH EXFOLIATION AND ULCERATION

Skin over entire body surface was erythematous, edematous, and covered with scales and crusts. Skin condition improved markedly with cortisone therapy but patient died of a cardiac condition complicated by bronchopneumonia. •

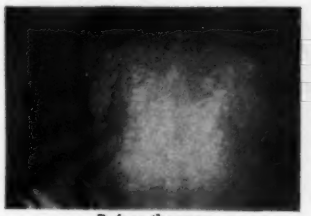
Before treatment

Following therapy with cortisone

EXFOLIATIVE DERMATITIS

Erythema, exudation, crusting and exfoliation involved entire body surface. Hemorrhagic crusts were present. Daily oral dosage of 200 mg. cortisone produced marked improvement of the skin by the 4th day; itching and exfoliation stopped; erythema considerably diminished. Maintenance therapy (100 mg./day) was necessary to prevent relapse. •

*Courtesy Henry J. Lehnhoff, Jr., M.D., Omaha, Neb.



Before therapy

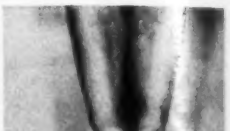
After cortisone treatment

THERAPY WITH CORTISONE
DERMATOLOGIC CONDITIONS

ATOPIC DERMATITIS

Patient had edema of one ankle; erythema of legs, thighs, back and arms, with fissuring, crusting and scaling. A total of 1,300 mg. cortisone administered orally over a period of 9 days resulted in definite improvement. No recurrence had been observed 2 months after discontinuation of cortisone.*

Before treatment



After therapy with cortisone

CONTACT DERMATITIS

Severe dermatitis of hand resulted from contact with detergent while washing an automobile. Cortisone applied locally in an ointment brought relief within a few days.

Before treatment

Following therapy with cortisone

Courtesy Tom Spies, M.D. Birmingham, Alabama

PENICILLIN SENSITIVITY

Seven days after treatment with penicillin a generalized giant urticaria resulted. Antihistamines gave only temporary relief of pruritus. Four days after daily oral administration of cortisone patient was symptom-free and suffered no relapse.*

Before therapy

After cortisone treatment

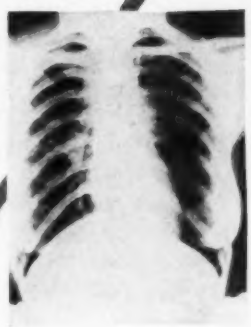
*Courtesy Henry J. Lehnhoff, Jr., M.D., Omaha, Neb.

THERAPY WITH CORTISONE
SARCOIDOSIS

Patient with severe bilateral ocular involvement and enlargement of mediastinal lymph nodes was treated with cortisone (intramuscularly) for 15 weeks; total dosage 13.7 Gm. Vision was less than 5%. Following therapy with cortisone vision improved to 76%, and lymph nodes began to shrink on the 10th day; after one month only residual enlargement of the nodes at one lung root remained evident.

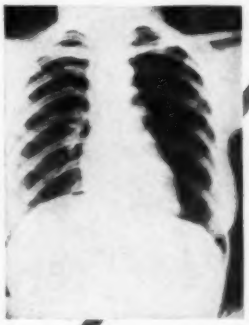
Before treatment

Enlargement of lymph nodes in both hilar areas and in right paratracheal region



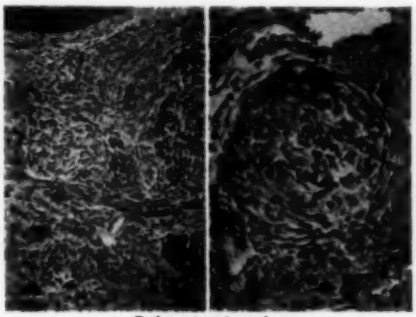
4 weeks after cortisone therapy

No enlargement of nodes in right hilar and right paratracheal areas. Lymph nodes in left hilar region are less than half of pretreatment size.

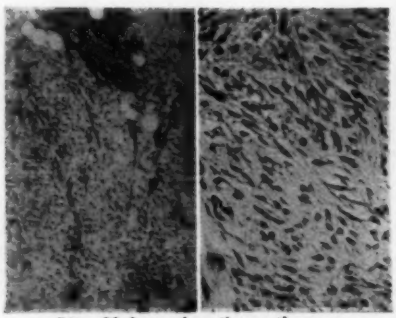


NICKERSON-KVEIM TEST

Test is performed with a preheated sterile saline suspension of sarcoid lymph node or splenic tissue. The suspension is injected intradermally. In a grossly positive test a red-brown papule, 2 mm. or larger, slowly appears, reaching its height in 4 to 6 weeks. The test area is then excised, since histologic control of the injected site is necessary. The test is positive in approximately 80% of patients with sarcoidosis.



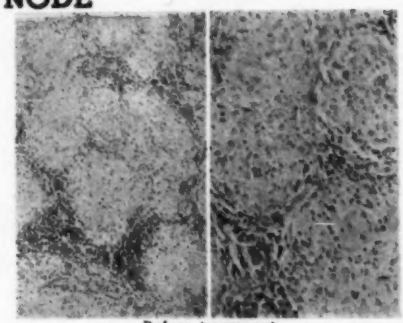
Before treatment



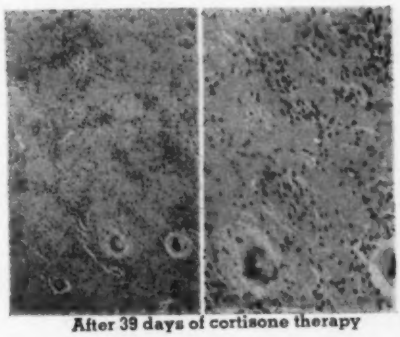
After 29 days of cortisone therapy

FEMORAL LYMPH NODE

Lymph node specimens were obtained from a patient with diffuse peripheral and mediastinal lymph node sarcoidosis, with unilateral ocular involvement of 2 years' duration. For 2 months the patient received cortisone therapy (150 mg./day). During the 3rd week the grossly enlarged peripheral lymph nodes began to shrink and at the end of the 6th week the nodes were barely palpable.



Before treatment



After 39 days of cortisone therapy

Note dense hyaline connective tissue where epithelioid cell granulomas were previously observed.

Courtesy Louis E. Siltzbach, M.D., Montefiore Hospital, New York, N. Y.

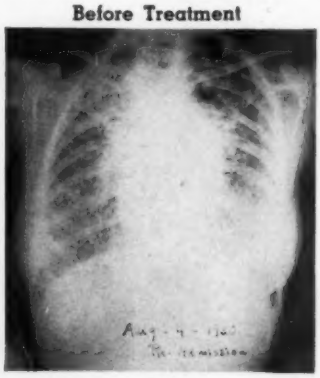
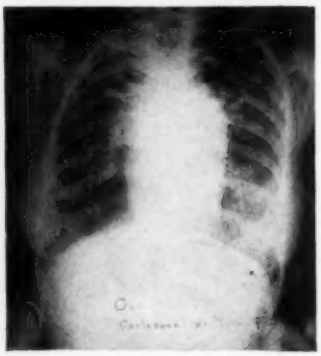
THERAPY WITH CORTISONE

BERYLLIOSIS

This hitherto intractable disease has shown a therapeutic response to cortisone. The roentgenograms show some degree of clearing of pulmonary granulomatosis, but this is no index of the dramatic results observed clinically, such as:

1. Reduction in dyspnea and cough
2. Increased vital capacity
3. Higher arterial O_2 content
4. Improvement in appetite
5. Increase in weight
6. General feeling of well-being

PATIENT L.M.

Before Treatment		After 2 Months of Cortisone Therapy*	
			
Weight	105 lb.	Weight	126 lb.
Vital capacity	1.5 L.	Vital capacity	1.8 L.
Breath holding	9 sec.	Breath holding	18 sec.
Symptoms:	Dyspnea, cough, loss of weight, weakness.	Symptoms:	Little cough, less dyspnea.
Status:	Confined to bed.	Status:	Feeling fine: able to work.

***DOSAGE WITH CORTISONE (typical course)**

200 mg. /day	3 days
100 mg. /day	30 "
50 mg. /day	5 "
25 mg. /day	7 "
12.5 mg. /day	7 "

(Courses and rest periods repeated as indicated)

*Courtesy H. E. Tebrock, M.D., Sylvania Electric Products, Inc., New York, N. Y.

THERAPY WITH CORTISONE

BURSITIS

Patient experienced intense pain when attempting to raise arm on the affected side. Forty-eight hours after administration of cortisone orally (100 mg. every 8 hours, first day; every 12 hours, second day) pain almost entirely disappeared. Two days later complete mobility of the arm had been restored. (Local injection therapy has also shown favorable results.)

N.B.—Although subjective symptoms are relieved in 48 to 96 hours following cortisone therapy, the roentgenograms may not show clearance of calcium deposits until several months later.

Before treatment

4 months later, following cortisone treatment.

Note that calcium deposits have disappeared.

Before treatment

Note restricted mobility of right arm, and pained expression.

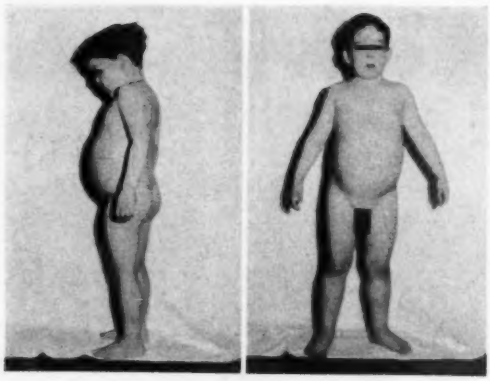
96 hours after starting cortisone therapy.

Note full mobility, with no evidence of pain.

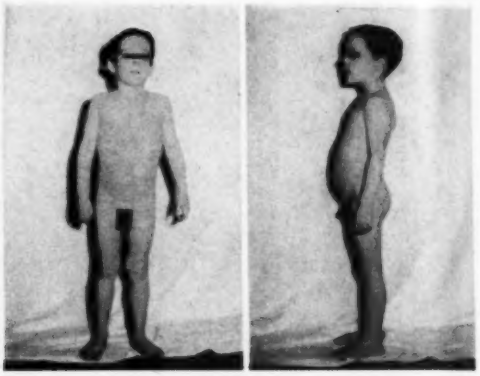
THERAPY WITH CORTISONE
NEPHROTIC SYNDROME

In the treatment of the nephrotic syndrome the use of cortisone has produced diuresis in patients in the nephrotic phase of glomerulonephritis, together with a reversion of blood chemistry findings toward normal.

PATIENT G.S., 5½ YEARS



Before treatment



2 weeks after treatment with cortisone

COURSE OF TREATMENT WITH CORTISONE

DATE	Mg./Day	WEIGHT Lbs.	URINE OUTPUT	ALBUMIN IN URINE
1/12/51	100	68	6 oz.	4+
1/13/51	200	69	6 oz.	4+
1/14/51	200	71	8 oz.	4+
1/15/51	100	70	8 oz.	4+
1/16/51	100	70½	25 oz.	3+
1/17/51	100	69	1 qt. 28 oz.	2+
1/18/51	100	64	4 qt. 16 oz.	1+
1/19/51	0	54	5 qt. 0 oz.	0
1/20/51	0	52	5 qt. 28 oz.	0
1/21/51	0	50	1 qt. 6 oz.	0

Courtesy Berger Clinic, Staten Island, N. Y.

THERAPY WITH CORTISONE
INFLAMMATORY EYE DISEASES

SUMMARY OF REPORT OF 150 PATIENTS TREATED WITH CORTISONE*

Disease	Patients Treated	Patients Responding Favorably	Failures	In 115 Patients Responding Favorably Route of Administration: Intramuscular	Topical	Subconjunctival
Allergic Conjunctivitis	17	14	3	–	14	–
Episcleritis	10	6	4	–	6	–
Superficial Keratitis	11	11	0	–	11	–
Deep Keratitis	17	16	1	–	16	–
Epidemic Herpes Zoster	3	3	0	–	3	–
Lime Burns of Cornea	4	4	0	1	2	1
Bullous Keratitis	4	3	1	–	2	1
Iritis, Acute	11	11	0	3	7	1
Iridocyclitis, Acute	12	10	2	1	6	3
Uveitis after Intraocular Surgery	12	12	0	3	6	3
Chorioretinitis	10	7	3	4	–	3
Anterior and Posterior Uveitis	12	6	6	1	3	2
Miscellaneous	27	12*	15**	5	4	3
Total	150	115	35	18	80	17
PERCENT		76.66%	23.33%			

*Including sympathetic ophthalmia, secondary glaucoma and acute optic neuritis.

**Including disciform degeneration of macula and chronic blepharoconjunctivitis.

* Courtesy 27 members of The New York Society for Clinical Ophthalmology

SARCOIDOSIS – OCULAR MANIFESTATIONS

(Cortisone administered systemically)

Vision < 5% before cortisone therapy

Vision > 75% after 15 weeks' treatment with cortisone

Courtesy L. E. Siltzbach, M.D., A. Posner, M.D., M. Medine, M.D., Montefiore Hospital, New York, N. Y.

THERAPY WITH CORTISONE

INFLAMMATORY EYE DISEASES

ACUTE IRITIS WITH SECONDARY GLAUCOMA

(Total of 1,100 mg. cortisone over 5-day period, given intramuscularly)

Before treatment:
Vision 20/137
Eyeball tension 48 mm. (Schiotz)

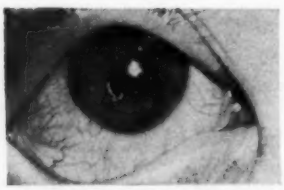
2 hours after initial treatment:
Vision 20/32
Tension 35 mm.

21 hours later:
Vision 20/20
Tension 20 mm.

SUPERFICIAL KERATITIS

(Cortisone saline suspension, diluted 1:4 with isotonic saline, and applied topically)

Before treatment



After 2 days' treatment

After 3 days' treatment

ALLERGIC CONJUNCTIVITIS

(Cortisone applied topically in <u>one</u> eye, ointment containing 25 mg./Gm.)

Before treatment

After 4 days' treatment

Note that inflammation has disappeared from both eyes though only one eye was treated.

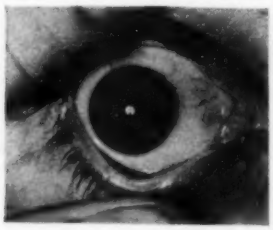
Courtesy S. M. Hoch, M.D., Rahway, N. J.

THERAPY WITH CORTISONE
INFLAMMATORY EYE DISEASES

IRIDOCYCLITIS

(Cortisone administered parenterally, and topically as ointment)

Before treatment



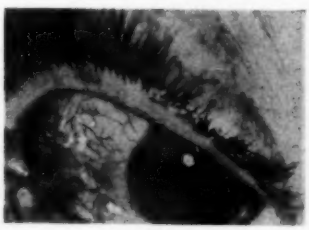
After 7 days' treatment

Courtesy J. H. Elser, M.D., New Brunswick, N. J.

UVEITIS

(Cortisone administered topically as ointment)

Before treatment



After 6 days' treatment

UNILATERAL EXOPHTHALMOS (idiopathic)

(2 Gm. cortisone administered systemically over 14-day period)

Before treatment

After course of treatment with cortisone

Courtesy Virgil P. W. Sydenstricker, M.D., Augusta, Ga.
Courtesy Robert B. Greenblatt, M.D., Augusta, Ga.

THERAPY WITH CORTISONE

OCCASIONAL UNDESIRABLE PHYSIOLOGIC EFFECTS

Prolonged administration of large doses of cortisone may induce certain exaggerated (but reversible) hormonal effects, e.g., clinical manifestations resembling those of Cushing's syndrome.

Rounding of face—"Moon Facies"

Hirsutism

Cutaneous striae similar to those of pregnancy

Pre-tibial edema

Buffalo hump*

Acne**

*Courtesy Walter Bauer, M.D. Boston, Mass.

**Courtesy Thomas H. McGavack, M. D. New York, N.Y.

Other undesirable effects to be watched for or guarded against include: electrolyte imbalance, water retention, adiposity, hyperglycemia, psychic disturbances, cardiac enlargement, hypertension, adverse influence on latent or active tuberculosis or other infections, activation of peptic ulcer, post-cortisone muscular weakness and hypoglycemia.

PRECAUTIONS

1. **Evaluate Relative Contraindications Before Using Cortisone. Careful Laboratory and Clinical Appraisal Essential.**
2. **Restrict Sodium Intake when Indicated to <1 Gm./day. Use Diuretics with Caution.**
3. **Prevent or Correct Hypopotassemia, Giving KCl 2-4 GM./day.**
4. **Control Hyperglycemia, Increasing Insulin Dosage in Diabetics as Necessary.**
5. **Detect Possible Psychic Disturbances Early, Reducing or Discontinuing Cortisone as Indicated.**
6. **Maintain Close Supervision During Therapy and Follow-up Periods.**
7. **Prevent Overexertion.**

Diagnostic Clinic

The Differential Diagnosis of Jaundice

WALTER G. MADDOCK*

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, CHICAGO

A most important clinical decision in the differential diagnosis of jaundice is whether the patient has a medical disease or one amenable to surgery.

Jaundice is rarely an emergency condition; an unnecessary operation on a patient with acute hepatitis greatly increases the mortality, whereas failure to diagnose a surgical lesion early does not lessen the benefits of operation.

THE differential diagnosis of jaundice can be very difficult, and I assure you that the things I have to say are just a start on this subject. If you want to know something about the liver and its diseases, you must continue to study that most important organ.

I have a patient here with jaundice. Her skin is dark in color. She is 35 years of age and has had jaundice for almost two years, which is quite unusual. She came down this morning in a cab; she gets around very well, she has some fatigability, but her distress is not too great. In January 1949 this patient developed chills, fever and pain in her joints. A tooth was pulled during this time and the dentist was the first to notice that she had jaundice. There is thus no possibility of hepatitis arising from an unclean NOVOCAINE® injection blocking the nerve roots. The icterus was mild at first, subsided, and then recurred. The stools were clay-colored in March 1949 and have varied in color since then. She has had no pain and itching has been inconstant. At first there was a weight loss of 10 pounds but this has been regained. Her appetite is good, her bowels are regular and the urine is dark in color. In November and December of 1949—just before the appearance of jaundice—the patient worked as a paint sprayer and did not wear a mask, but no other workman wore a mask on this job. It is unusual for jaundice from a toxic substance to last this length of time; it is either fatal early or it clears up.

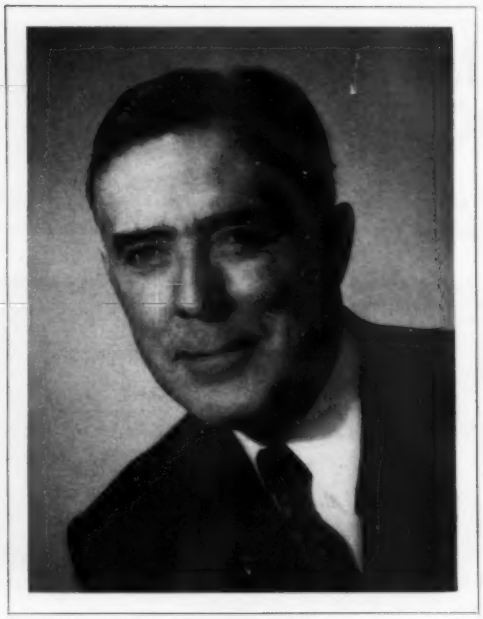
In the past history there is no record of cholecystitis nor of a recent operation with the transfusion of plasma or whole blood. She had a sympathectomy for Raynaud's disease of the hands in 1942. There is no history of alcoholism.

Physical examination at the time of admission to Wesley Memorial Hospital showed a woman in good general appearance except for the jaundice. She was comfortable; head, neck, heart and lungs were normal. The abdomen was soft. The liver was palpable three fingerbreadths below the rib margin and the surface was smooth, nontender and soft. The gallbladder was not palpable and the spleen was not felt. There was no evidence of ascites or collateral venous circulation. There was some atrophy of the fingertips as a result of her old Raynaud's disease.

Laboratory studies revealed the stools to be light brown in color; the urine showed a considerable amount of bile and urobilinogen. The

*Professor of Surgery, Northwestern University Medical School, Chicago, Illinois.

Presented at the thirty-fifth (Chicago) annual Assembly of the Interstate Postgraduate Medical Association.



WALTER G. MADDOCK

blood on admission was moderately anemic: red blood count 3,850,000 per cubic millimeter; hemoglobin 71 per cent; platelets 139,000 per cubic millimeter—a little bit below normal; prothrombin time 100 per cent; total plasma proteins 6.69 gm. per cent; albumin 3.40, globulin 3.29—not quite a reversed ratio but an increase in the globulin. The van den Bergh test was direct 4 plus; this does not mean much to me because this test varies a great deal. The icteric index was 74; thymol turbidity 1 unit, which is not very high. Bleeding and clotting times were normal. Alkaline phosphatase was 39.6 which, of course, is very high and goes with an obstructive type of jaundice. Urea nitrogen, hippuric acid test and blood sugar were normal; blood cholesterols were 400 mg. per cent (normal 180 to 240), suggesting obstructive jaundice.

Our first impression was that this patient was suffering from a low grade hepatocellular type of jaundice, chronic, possibly infectious in origin, but such disease generally does not last this length of time. Further possibilities were other diseases producing incomplete biliary obstruction—cirrhosis, a common duct stone or stricture of the common duct, a polyp of the ampulla of Vater, etc.

Because of the long duration of this patient's jaundice, we felt that an exploratory laparotomy was indicated. She was treated preoperatively with vitamin K and other vitamins, a high protein, high carbohydrate, low fat diet, iron by mouth, two blood transfusions and METHISCOL®, which is a choline and methionine mixture.

At the time of laparotomy on July 24, 1950, the patient had no increase of free fluid in the abdomen. The liver was twice the normal size and dark in color, and the surface was smooth and of normal consistency. The spleen was about three times the normal size. The pancreas was normal. The gallbladder was whitish and completely collapsed. I had never seen a gallbladder like this before; it was about the thickness of a lead pencil and contained only a slight amount of bile and no stones. The common duct was collapsed just like the gallbladder and was somewhat whitish but not thickened. A very unusual finding was a hepatic artery approximately 4 to 5 times the normal size. I found no aneurysmal dilatation of this artery and no evidence of an arteriovenous fistula.

Although the impression was that the liver was not excreting bile, I opened the common duct to make sure there was no obstruction and found none. A very small amount of clear bile was present. I could pass a probe through the ampulla of Vater into the duodenum, but to be certain there was no soft polyp in that area I also opened the duodenum to inspect the ampulla directly. It was entirely normal. The opening in the duodenum was closed; the opening in the common duct was closed about a small T tube. A biopsy was taken from the liver.

Postoperatively the patient's course was quite uneventful. The T tube was left in for 12 days and drained a small amount of clear bile. A choledochogram showed small bile ducts in both lobes of the liver but no point of obstruction in either the intrahepatic or extrahepatic duct systems.

The pathologic report on the biopsy was that of bile pigmentation and slight subacute portal inflammation. This was not too helpful, and the best possible diagnosis was a hepatocanicular type of jaundice—a rare condition in which the liver cells themselves are fairly good in appearance but the bile ducts are small and the liver as a whole does not excrete bile.

This case will not help you in the differential

diagnosis of jaundice because of its rarity, but it does indicate the complexity of the disease in some instances. I am still suspicious that the very large hepatic artery is somehow significant in this case. I would like to reoperate on this patient and take a roentgenogram of the liver at the time of injecting a radiopaque substance into the hepatic artery. An intrahepatic aneurysm or fistula may be present. Or some disturbance of intrahepatic circulation because of the large arterial flow may be interfering with bile excretion.

In the differential diagnosis of jaundice the most important decision is whether the patient is a medical case or a surgical case. One should avoid operating on a patient when the mortality is likely to be high, as at the acute onset of hepatitis; at the same time the surgeon should not miss the chance of doing the patient the most good when a surgical lesion is present. Let me present some points of aid and some others of little value in this cardinal decision. I have liked the study of Giansiracusa and Althausen[1] on the diagnostic management of patients with jaundice. These two men analyzed 100 of their cases in which they knew the correctness of the diagnosis from either operation or autopsy and found the following distribution:

Obstructive jaundice	
Common duct stone	20
Carcinoma of the pancreas	23
Lymphosarcoma	1
Stricture of the common duct	2
	46
Parenchymatous jaundice	
Portal cirrhosis	24
Biliary cirrhosis	2
Xanthomatous biliary cirrhosis	1
Acute hepatitis	22
Acute yellow atrophy of the liver	2
Primary carcinoma of the liver	1
	52
Hemolytic jaundice	
Congenital hemolytic icterus	2
	100

The 2 patients with congenital hemolytic jaundice offered no diagnostic problem because of the familiar history, anemia, mild icterus, splenomegaly, spherocytosis, increased bile in the stool, usually no bilirubin in the urine and an indirect blood van den Bergh reaction. So I will go on to consider obstructive jaundice versus parenchymatous jaundice. Notice that 24 cases of obstructive jaundice were due to malignancy. I will say now, and say it again later, that when there is complete obstructive jaundice for 10 to 14 days or more, as shown by no bile in the stools and corroborated by no urobilinogen in the urine, there is a 95 per cent chance that one is dealing with a malignancy, an unrelenting disease. In the parenchymatous type of jaundice the obstruction is usually incomplete, and when one finds evidence of an incomplete obstruction, some bile in the stool and urobilinogen in the urine, there is a 90 per cent chance that the disease is due to a benign lesion. Let's look further at Giansiracusa and Althausen's and other analyses for helpful or nonhelpful diagnostic information.

DATA OF VALUE IN THE HISTORY

Sex is of some aid, since obstructive jaundice is two to four times as common in men as in women, largely because 90 per cent of carcinoma of the head of the pancreas occurs in men. Hepatic cirrhosis also has a sex predominance of 66 per cent men to 34 per cent women. Cholecystic disease is more common in women, and patients whose jaundice is due to common duct stone or cholangitis will give a history of previous cholecystitis in 85 per cent of the cases. So one has this great help in differentiating icterus due to a complication of gallbladder disease.

True biliary colic—severe pain referred to the back and going up to the shoulder—occurred in 75 per cent of the cases of obstructive jaundice, but it also occurred in 25 per cent of the parenchymatous types of jaundice. These percentages are thoroughly typical of data in the differential diagnosis of jaundice; that is, a given symptom or sign may point toward obstructive jaundice or parenchymatous jaundice in the great majority of cases, but there are always the few patients in the opposite group with approximately the same symptoms. Biliary colic, then, may be present in carcinoma of the pancreas or in acute hepatitis.

Chills and fever are common symptoms with jaundice and may usher in an attack of hepatitis or cholangitis. In Giansiracusa and Althausen's series, 70 per cent of the patients with these symptoms had obstructive jaundice and 50 per cent had a stone in the common duct.

A HISTORY of moderately severe to severe *alcoholism* gave an 88 per cent association with parenchymatous jaundice, largely because roughly 60 to 80 per cent of patients with cirrhosis have so imbibed. But just remember that 95 per cent or more of patients with severe alcoholism do not develop cirrhosis, and one can be easily misled by considering all icteric alcoholics as cirrhotics.

Weight loss occurs with both obstructive and parenchymatous jaundice, but the severe weight losses (20 pounds or more) are associated largely with obstructive jaundice because of the rapid downhill course of most patients with carcinoma of the pancreas.

DATA OF LITTLE VALUE IN THE HISTORY

Age may or may not be a help because of variations on both sides. In general, the majority of patients with obstructive jaundice are over 40 years of age, while those with parenchymatous disease are under 40.

Prodromal symptoms of anorexia, nausea, epigastric distress and malaise are usually thought of as indicating the onset of acute hepatitis and are common in acute hepatitis, but they also occur in the obstructive jaundice group.

Pain in the abdomen and back, exclusive of biliary colic, occurred in 33 per cent of Giansiracusa and Althausen's total cases and was divided 58 per cent in obstructive jaundice and 42 per cent in parenchymatous jaundice.

Relation of the onset of pain to the onset of jaundice was once considered to be helpful, largely because of a statement that a patient with jaundice due to stone in the common duct would have pain beginning almost simultaneously with the jaundice. This was investigated in 18 cases of obstructive jaundice with the result that the pain preceded the jaundice in 6 and was simultaneous in 12. In the 8 hepatitis patients the pain preceded the jaundice in 3, was simultaneous in 3 and followed in 2, so not much help was given by this factor.

Absence of pain was once considered to be a very important sign of carcinoma of the head of the pancreas, but in Giansiracusa and Althausen's series the jaundice was painless in only 43 per cent of the patients with carcinoma of the head of the pancreas, and there was also no pain in 42 per cent of the hepatitis group. Surprisingly, 40 per cent of the cases of common duct stone also had no pain. Thus the absence of pain offers no great help in the differential diagnosis of jaundice, and its infrequency with common duct stone should be remembered.

Itching would be a much more interesting finding if it were of differential value. I have always hoped that the patients with obstructive jaundice would scratch and the ones with parenchymatous jaundice would not, but it doesn't work that way.

PHYSICAL OBSERVATIONS OF VALUE

Hepatomegaly occurs in about half the patients with jaundice and equally in both kinds, but patients with marked hepatomegaly—7 cm. or more below the rib margins—are found three times more often in the parenchymatous group than in the obstructive group.

Ascites is a very important physical finding. If the patient has fluid in the abdomen, the chances are 9 to 1 that he has parenchymatous jaundice, due largely to cirrhosis.

Evidence of collateral venous circulation is also a very important finding occurring 9 to 1 with parenchymatous jaundice, and in 80 per cent of the cases it was associated with cirrhosis of the liver. However, less than half of the cirrhotic group with jaundice develop these collaterals, so it is a good sign if present, but it is not always present.

Arterial spider angiomas, with pulsation that can be easily seen on pressure with a glass slide, are also an important sign if found, occurring always in patients of the parenchymatous group and rarely in other than the cirrhotics.

A palpable gallbladder brings up Courvoisier's law and is an important finding, since if a patient with jaundice has a distended gallbladder there is a 100 per cent chance that he falls within the obstructive group, and the chances are 9 to 1 that his disease is due to carcinoma of the head of the pancreas rather than to a common duct stone. The disappointment is that only about 50 per cent of the patients with carcinoma of the head of the pancreas have a distended gallbladder, so it is another of those fine signs if present, but not always present.

If there is *splenomegaly* there is a 3 to 1 chance that it is associated with the parenchymatous type of jaundice rather than the obstructive type.

All these percentages seem a bit confusing, but in many instances it is only by putting every available bit of evidence together that one can arrive at the proper diagnosis. The cause is often a puzzle and concrete ideas on the significance of this or that finding are needed to evaluate its importance.

LABORATORY TESTS

It has been said that the chief value of laboratory tests is that they take time, and during this time the physician can go over the patient repeatedly, follow his clinical course and with deliberation arrive at the proper diagnosis. This reference to the tests is not absolutely true, but it does signify that chief reliance should not be placed on the laboratory alone. And, further, the importance given to the various tests varies with different men.

X-ray studies may be of considerable value. A gastrointestinal series will show esophageal varices in about a third of the patients with cirrhosis of the liver; and a third of the cases with carcinoma of the pancreas have some changes in the duodenum—a widening of its curve or narrowing of its lumen. A tumor of the ampulla of Vater may stand out distinctly or distort the duodenal pattern. The finding of a carcinoma in the stomach or colon makes it almost certain that the jaundice is due to secondary metastases to the liver. Ordinary flat plates of the abdomen often detect gallstones or they show up on a cholecystogram. The latter study is best not done while jaundice is present since it adds an additional job to a liver of already low excretory function and consequently concentration of dye in the gallbladder is very seldom seen. If possible, the test should be made between the attacks.

Serum protein studies should always be done. Total values are frequently low with jaundice, and 75 per cent of patients with reversal of the albumin-globulin ratio are suffering from parenchymatous jaundice, usually due to cirrhosis. The reversal also has important value in that it is about the best index of severe chronic liver disease.

Liver function tests in general are of much more value in denoting and following the degree of liver damage than in aiding in the differential diagnosis of jaundice. In the early stages—within the first 5 to 10 days—they are of some help in the latter regard since in hepatocellular disease the metabolic and excretory tests are quite often below normal whereas in external obstruction the data are normal or close to normal. Later in obstructive jaundice the liver cells also become damaged and the various tests give the same result as in the hepatocellular group and are useless as differential aids.

A most important and simple observation to be made at least every second day is the presence of bile pigment in the stools, and a rough estimate with the eye as to color is about as good as the more complicated chemical determinations. A check can be made for urobilinogen in the urine, since this is present only if there is bile in the stools. Acholic stools may occur with hepatitis and acute liver necrosis for a week or two but seldom longer. Persistent lack of bile signifies obstructive jaundice from unrelenting disease, in 95 per cent of the cases due to carcinoma of the pancreas or extrahepatic biliary system—ducts, gallbladder or ampulla of Vater.

The other liver function tests all have their proponents. The icteric index or serum bilirubin is very useful in following the progress of the jaundice. The bromsulfalein is an extremely sensitive excretion test but adds nothing when bile pigment cannot be excreted and jaundice is present. It should be used when jaundice is slight or absent. Response of a low plasma prothrombin level (70 per cent or less) to an injection of vitamin K by an increase in 20 per cent or more occurs in 70 to 90 per cent of patients with obstructive jaundice and fails to improve in about the same percentage of cases with severe acute hepatitis and cirrhosis. The total blood cholesterol and cholesterol esters are usually increased in obstructive jaundice.

The van den Bergh, cephalin flocculation and thymol turbidity tests, the galactose and hippuric acid excretions and serum alkaline phosphatase levels all may be done without aiding in many instances in making the differential diagnosis between obstructive and parenchymatous jaundice. As mentioned before, in the early stages they have value, but late in the disease they are of little diagnostic significance. There is no substitute for continued study of the patient and clinical experience.

A STUDY OF CLINICAL ERRORS

Let me present now a short review of an excellent and instructive study of errors in the

diagnosis of jaundice by Franklin White of Boston.[2] Of 175 cases in which the diagnosis was known by operative or autopsy findings, the wrong diagnosis was made in 14 (8 per cent). It is worth while looking at this group.

Case 1 was diagnosed as cancer on the basis that complete obstruction was present. There was no bile pigment in the stool and no urobilinogen in the urine for 10 days. At operation, this patient with painless increasing jaundice had chronic cholecystitis with the hepatic and common ducts solidly plugged with putty-like material and gravel. This was the one exception in this series to the finding that about 95 per cent of patients with complete obstruction have carcinoma of the extrahepatic ducts, gallbladder or pancreas.

In general the patients with painless jaundice offer the most problems in differential diagnosis. Earlier in this presentation I mentioned that 85 per cent of patients whose disease is due to cholecystitis or one of its complications give a history and/or have signs of cholecystitis. This patient was one of the variants. The mistake here was not important. Surgery was carried out and a better situation was found and corrected. I should point out that, consistent with other exceptions in the differential diagnosis of jaundice, a few patients with cancer of the bile ducts, ampulla of Vater and pancreas do not develop complete biliary obstruction until late in their disease. We will see examples of this later in cases 3, 4 and 5.

Case 2 had slight jaundice (lasting only two days) due to empyema of the gallbladder, cholangitis and multiple liver abscesses which was masked by a known chronic genitourinary tract infection, pyuria, pyelitis and prostatic abscess. Thus multiple lesions are confusing, and one will be hard put to avoid the error at times of picking on the wrong disease.

Case 3 was diagnosed as cirrhosis when cancer of the duodenum was the correct diagnosis. The patient was a man of 60 with alcoholic habits and a continuous, deep, painless jaundice for six weeks. A gastrointestinal x-ray series was normal. The jaundice was incomplete at the time the diagnosis of cirrhosis was made, stools were yellowish to gray and urobilinogen was in the urine. In the last two weeks of life, complete biliary obstruction occurred with clay-colored stools and absence of urobilinogen in the urine. At autopsy a carcinoma of the ampulla of Vater was found involving the duodenum and pancreas and with a few metastases to the liver. Originally too much attention was paid to the alcoholism and only late in the disease did complete obstruction occur, signifying the presence of a malignancy.

Case 4 was a 51 year old, moderately alcoholic man with dull pain in the region of the right scapula, deep jaundice for one week, slight hematemesis and some fever. There was a question of a palpable spleen and some ascites. Stools were light brown. Urobilinogen was increased in the urine. A diagnosis of portal cirrhosis with possible latent carcinoma was made. At autopsy, primary carcinoma of both hepatic ducts was found but with only partial obstruction. This was the second case of a malignancy with only incomplete biliary obstruction.

Case 5 also had incomplete biliary obstruction—bile pigment in the stool and increased urobilinogen in the urine. A soft adenocarcinomatous polyp of the common duct produced epigastric pain, chills, an irregular fever and moderately deep jaundice, for which the easily understood erroneous diagnosis of cholecystitis with cholangitis was made.

Case 6 was the most important error, because a patient with acute hepatitis was operated on for obstruction to the common duct, and he died. Autopsy showed a healing acute yellow atrophy. The findings certainly were confusing, for this 60 year old man with two weeks of painless, steadily increasing deep jaundice had complete obstruction with no bile pigment in the stool and no urobilinogen in the urine for 10 days. White concluded that a longer period of observation might have avoided this mistake. I made the same error some time ago by operating on a patient who turned out to have long-standing acute hepatitis. The day before the operation an icterus index study had been done, but the report was not obtained before the operation. It showed a decided decrease from the previous icteric index levels, and if the result had been known no operation would have been performed.

Cases 7 and 8 were diagnosed as portal cirrhosis when pigment cirrhosis was the correct diagnosis. Neither patient had external pigmentation or glycosuria and both were hard drinkers. The errors were not serious since both types call for medical treatment.

Case 9, a patient with portal cirrhosis and

cholecystitis, was erroneously diagnosed as having biliary cirrhosis because the gallbladder disease caused typical symptoms. This certainly was an understandable error hard to avoid.

Four cases of metastatic cancer involving the liver were overlooked. In 2 the primary lesion was so small that it was found only at autopsy; in case 10 there was a pea-sized nodule in the breast; in case 12 there was a tiny placque in the esophagus. Case 11 had the primary lesion in the body of the pancreas and no involvement of the common duct. The body and tail of the pancreas are obscure sites for any tumor, and it will be difficult to diagnose unless the tumor is large or there is pain from the area. Case 13 had a carcinoma of the stomach which was suspected but not confirmed by x-rays because of weakness of the patient and vomiting.

In White's whole series the known errors were, with one exception, in the chronic group, and over half the errors were associated with the diagnosis of cancer, almost always in overlooking small primary tumors producing the biliary obstruction or accounting for extensive liver metastases. The diagnosis of cancer of the liver is easy when there is a history of a previous operation for cancer or findings of cancer elsewhere, but in baffling cases malignancy should be suspected. Primary cancer of the liver is difficult to diagnose. The clinical picture is much like late hepatic cirrhosis, in which condition it usually develops, and about the only differential is the finding of nodules on the liver surface. White found only 1 hepatoma in 41 cases of cirrhosis coming to autopsy.

Case 14 had the erroneous diagnosis of hepatorenal syndrome because of continued hepatic and renal damage, whereas the 41 year old patient actually had arteriosclerotic heart disease with multiple infarcts to the lungs and spleen, to which insufficient attention was paid. The sudden appearance of jaundice in patients with chronic myocardial insufficiency should always make one suspect pulmonary infarcts.

LIVER BIOPSY

Direct examination of liver tissue is being used increasingly in the differential diagnosis of jaundice. The biopsy can be obtained by (1) surgical approach, (2) peritoneoscopy and (3) needle or punch biopsy. The latter is rapidly supplanting the other methods because it is a simple, fast and relatively inexpensive procedure that may be performed at the patient's bedside. It does, however, carry a mortality of about 0.5 per cent and should always be done in a hospital with adequate transfusion and surgical facilities. As a surgeon I am not fond of blind punctures and have considerable respect for the degree of bleeding occasioned by excising a biopsy specimen from the liver edge. I also appreciate the opportunity of seeing the liver and other intra-abdominal structures and selecting the site for biopsy. However, needle or punch biopsy is being used, and with satisfying results. In any institution the method should be in the hands of one or two men, preferably surgeons. The special interest of the pathologist is needed as a member of the team concerned with liver biopsy, since repeated familiarity with the small bits of tissue obtained enhances the accuracy of the diagnosis. It is important to have complete cooperation of the patient, as inadvertent breathing during the 10- to 15-second puncture of the liver can produce tearing, hemorrhage and/or leakage of bile. The presence of pyogenic abscesses of the liver, cholangitis or inflammatory processes of the lower lung or pleural space are considered as contraindications to the transthoracic approach. When hepatomegaly is present, the transabdominal route is usually used. Passive congestion of the liver has been considered a contraindication by some. Most authors prefer a prothrombin time of at least 50 to 60 per cent, but others have performed needle biopsies in patients wth prothrombin levels as low as 25 per cent with no untoward effects by giving vitamin K prophylactically.

Needle or punch biopsy is obviously more accurate in conditions of diffuse liver involvement, nodular or focal lesions being more likely to be missed. Nevertheless, the degree of confirmation is surprisingly good, inasmuch as deeper samples can be obtained. McHardy[8] reported a 96 per cent accuracy of the liver biopsy method in a series of cases followed by surgical or postmortem confirmation. The indications listed for the procedure are: (1) hepatomegaly of undetermined origin; (2) the differential diagnosis of jaundice; (3) neoplasms of the liver; (4) hepatic cirrhosis; (5) determination of the progress of a hepatitis; (6) in cases of undiagnosed systemic disease; (7) as an evaluation of therapy; (8) as a research tool, and (9) evaluation and correlation of liver function tests.

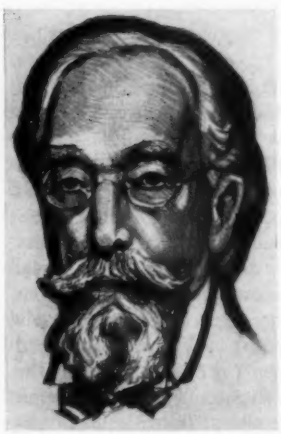
It is important to emphasize that jaundice is rarely an emergency condition, and time can be taken to separate the medical cases from the surgical cases. This is absolutely essential because the operative mortality in patients with severe cirrhosis is 15 to 35 per cent and nearly 100 per cent in instances of severe acute hepatitis or acute yellow atrophy. Thus, in acute cases without obvious pyogenic infection or pain the danger lies in too precipitous an operation. On the other hand, one is concerned about possibly withholding surgery when an operative lesion like a stone in the common duct or a resectable carcinoma of the head of the pancreas is present. Unfortunately, resection of the latter is not yielding the results we would like, since too many of the tumors have spread widely and are not resectable and recovery from the extensive surgery is delayed. We are now beginning to feel that only small, movable lesions should be resected, and the others should have some sort of a short-circuiting procedure such as a cholecystoduodenostomy or cholecystojejunostomy.

Whenever the diagnosis is in doubt, as it will be in a few cases, conservative treatment is in order. Continue to observe the patient and give him every form of supportive treatment. Follow the course of the disease clinically and by repeated laboratory tests. Determine frequently whether bile is present in the stools and urobilinogen in the urine, and chart the icteric index or serum bilirubin once or twice a week. Delay may be feasible for several weeks. It is known that most cases of acute hepatitis begin to clear up in two months or less, and patients with acute yellow atrophy die or show definite improvement in that time. On the other hand, obstructive jaundice from common duct stone is usually well tolerated with supportive therapy. Thus, with conservatism, one can manage to avoid the mortality from operating on patients with medical types of jaundice and at the same time not delay unnecessarily the benefits of surgery when removable lesions are present. Conservative management does not denote a passive process but is an active, supportive plan with frequent reviews of the patient's progress and alertness to note changes.

REFERENCES

1. Giansiracusa, J. E. and Althausen, T. L.: Diagnostic management of patients with jaundice. J.A.M.A. 134:589-596, 1947.
2. White, F. W.: A study of errors in the diagnosis of jaundice. N. E. J. Med. 229:997-1002, 1943.
3. McHardy, G., Browne, D. C. and Edwards, E.: Peritoneoscopic and biopsy evaluation of hepatic disease. Gastroenterology 9:682-685, 1947.

"THE THIRD PHASE OF MEDICINE"



Although interest and progress in the field of physical medicine were given strong impetus during and immediately following World War II, the basic principles of therapy by physical and mechanical means were established long before.

In early civilizations, hydrotherapy was a highly developed practice and, of course, the more modern spa has a direct "ancestor" in the old Roman baths.

In the United States, the man who was largely responsible for initiating and promoting physical medicine, and particularly hydrotherapy, was Dr. Simon Baruch. Before coming to New York to practice medicine in 1881, Dr. Baruch had lived in Camden, South Carolina, where he had been in general practice. Turning his attention more to the use of water as a remedial agent in 1886, Dr. Baruch not only accomplished the acceptance of hydrotherapy as a method of treatment, but also conducted a successful campaign to provide public baths for people who did not have facilities in their homes.

Edmund Kopietz' cover painting which features Dr. Baruch combines representations of the principal agents of physical medicine—therapy by heat, electricity, water and mechanical means.

Reproductions of the cover, mounted and ready for framing, are available from *Postgraduate Medicine*, 516 Essex Building, Minneapolis 3, Minnesota. Price: $1.00.

Diagnostic Clinic

Roentgen Evidence of Bronchogenic Carcinoma

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Whether the increasing incidence of bronchogenic carcinoma is real or apparent has been discussed to a considerable extent in recent years. One important factor in earlier discovery of the disease has been improved technics in roentgenographic diagnosis. Diagnostic procedures and management of bronchogenic carcinoma are presented in a series of illustrative cases, with emphasis on the problems facing the radiologist.

THE increasing incidence of bronchogenic carcinoma has been rather generally discussed in the medical literature in recent years. This high incidence has been variously attributed to (1) the longer life expectancy during the past 50 years with more people living to the so-called "cancer age"; (2) the increased use of irritants, particularly cigarettes, by members of both sexes; (3) the present awareness of the medical profession of the problem of bronchogenic malignancy, and (4) the improvement and wider use of diagnostic procedures including x-ray, bronchoscopy and the cytologic study of bronchial secretions. Another contributing factor has been the wide use of antibiotics and sulfonamide drugs in the pneumonias of the aged, many of these being frank pneumonias either complicating or secondary to a previously undiagnosed and unsuspected bronchogenic carcinoma. Formerly these patients died of the pneumonic process and were so classified. Today many of them recover from the acute condition and not infrequently the residual pathologic changes of an unresolved pneumonia prove to be a bronchogenic carcinoma.

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Presented at the thirty-fifth (Chicago) annual Assembly of the Interstate Postgraduate Medical Association.

Most of the reports on large series of cases refer to the complaints registered by the patients. Such complaints usually include cough, hemoptysis, weakness and loss of weight. In reviewing series of such cases one is impressed by the large number of patients who present none of these complaints and whose complaints are apparently not referrable to the lung, or whose complaints are such that they lead to an incorrect diagnosis. The study of a sizable number of these cases has prompted the preparation of this clinic.

Some of these cases have been encountered in the routine admission roentgenographic study of the chest now being conducted in many hospitals. Two of the hospitals with which I am associated have adopted this procedure; in one case a lesion was found which on further study proved to be a bronchogenic carcinoma; in the other, one unsuspected bronchogenic carcinoma was found in the first 400 admissions. Tuberculosis case-finding programs have been responsible for uncovering not a few unsuspected malignancies and, strangely enough, I have found two such neoplasms in patients whose curiosity had been aroused by scientific releases in the lay press on the incidence of bronchogenic carcinoma in cigarette smokers, the curiosity resulting in a request by the patient for

WARREN W. FUREY

roentgenographic examination because of his awareness of excessive smoking.

To demonstrate my remarks, I have chosen a number of case reports of patients who have created problems for us. These will be discussed with a brief synopsis of the history and pertinent clinical findings.

CASE REPORTS

Case 1—The patient, a white housewife aged 57 years, entered the hospital as an emergency following the sudden onset of severe pain in the left side of the chest, left shoulder and radiating down the left arm. She appeared to be in shock, had considerable difficulty in breathing and was found to have a very slow, irregular pulse. She was immediately placed in an oxygen tent and given supportive treatment on the provisional clinical diagnosis of acute coronary artery disease. Her condition improved after a few days, the pain disappeared, breathing was easier and her pulse returned to normal.

Physical examination at this time was reported as negative. As the patient's condition improved a routine film of the chest was made. This showed the heart about normal in size but slightly displaced to the left of the midline, and the lung fields appeared clear. Because of the cardiac shift a lateral roentgenogram was made which revealed a triangular shadow of dense cloudiness just posterior to the cardiac shadow. This had the appearance of an atelectatic collapse of the lower lobe of the left lung. Atelectasis is frequently one of the roentgenographic signs of a bronchogenic carcinoma, the collapse of the lung being due to the gradual bronchial obstruction resulting from the progressively enlarging tumor. (Figure 1.)

Bronchoscopy was done and a mass was found in the left lower main bronchus, producing obstruction. Biopsy proved this to be a bronchogenic carcinoma. The patient refused operation. She died later of metastases and extension of the tumor to the esophagus.

Case 2—The patient, a white housewife aged 35 years, was first seen as an office patient, having been referred by her obstetrician for a routine film of the chest primarily to eliminate the possibility of tuberculosis. This procedure has been adopted by many obstetricians as a part of the prenatal examination in addition to the usual urine, blood and other laboratory tests that have been used routinely for years. The patient had no complaint other than the physiologic one of pregnancy. (Figure 2.)

Roentgenogram revealed a small, rounded, dense shadow just above the base of the superior lobe of the right lung with a few fibrotic strands radiating outward and upward from the hilus but not to the area of infiltration. This was at first thought to be due to minimal active pathology, probably of tuberculous origin. The patient was sent elsewhere for a tuberculosis survey but no other evidence of the disease was found. In the course of her check-up other films were made which showed a marked increase in the size of the lesion but no apparent change in the other lung findings. Because of the remarkable change the possibility of neoplasm was considered. Bronchoscopic examination was done and carcinoma cells were found in the aspirated bronchial material. Right pneumonectomy was done.

The patient made an uneventful postoperative recovery and progressed favorably for several months when evidence of metastasis was found in the neck. She survived for about one year.

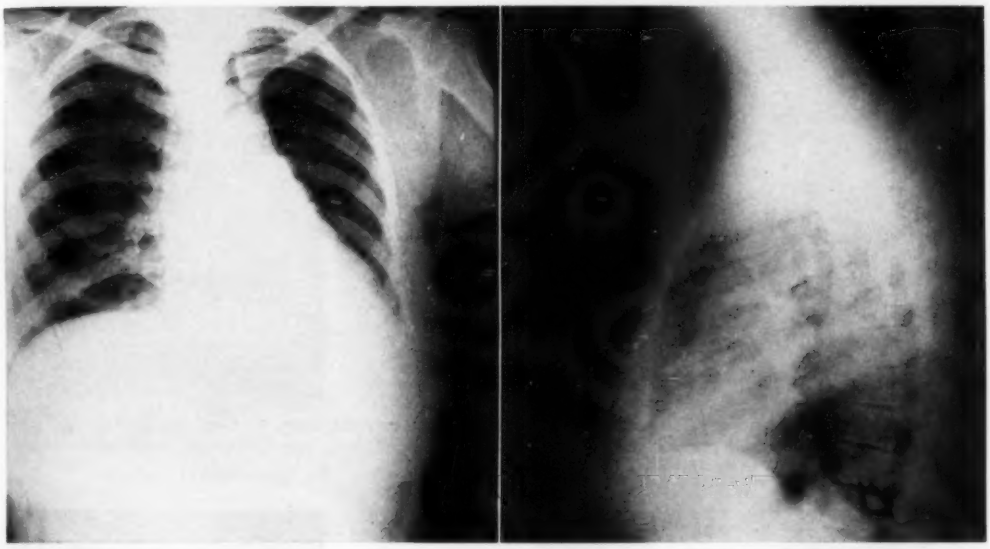

FIGURE 1 (Case 1). a. Showing cardiac and mediastinal displacement to the left. b. Lateral roentgenogram showing a triangular area of atelectasis posterior to the cardiac shadow.

An interesting observation in this case is that bronchogenic carcinoma can occur in younger individuals; it is not necessarily a disease of the aged, hence it should be thought of in any obscure pulmonary lesion and ruled out by careful and thorough study.

Case 3—This patient, a white male aged 57 years, entered the hospital for a general check-up. He had given a history of recurring peptic ulcer and was having some abdominal distress. Physical examination was negative. He had no complaint referrable to the chest but fluoroscopic observation during gastrointestinal study and hospital admittance chest film revealed a round shadow of increased density just below the right hilus. This was studied extensively by bronchoscopy, oil injection and examination of bronchial secretions but a definite diagnosis could not be established. Other films made elsewhere showed the mass to lie anteriorly near the anterior chest wall. The possibility of a retrosternal hernia was considered and certainly the possibility of bronchogenic carcinoma was not forgotten. Exploratory operation was done and an inoperable carcinoma was found, the inoperability being due to extensive vessel involvement about the hilus. The patient died about a year later of metastases.

Case 4—The patient, a white male aged 48 years, had been in an automobile accident about 10 days prior to hospitalization. Films made of the thoracic cage for injury to the ribs disclosed a small, round shadow of infiltration in the right lower lung. This was called to the attention of the patient and he was advised to consult his family physician for further study.

The patient's general condition was good; he had no complaint other than the rib pain resulting from the accident and a knowledge that x-ray had shown evidence of trouble in his chest. Roentgenographic examination of his chest revealed the round area of infiltration just below the right hilus. In the lateral film this was shown to lie anteriorly in the upper portion of the middle lobe. He had been a patient in our hospital in 1948 at which time a survey film failed to show evidence of a lesion. The absence of calcification and the rapidity of growth suggested malignancy. Bronchoscopic examination and laboratory studies were negative. (Figure 3.)

The patient was operated upon, the mass was found and total right pneumonectomy was done. His postoperative course was uneventful except for difficulty in breathing. Film made at this time showed a marked shift of the mediastinum to the right, probably accounting for the dyspnea. Plasma was injected into the right lung

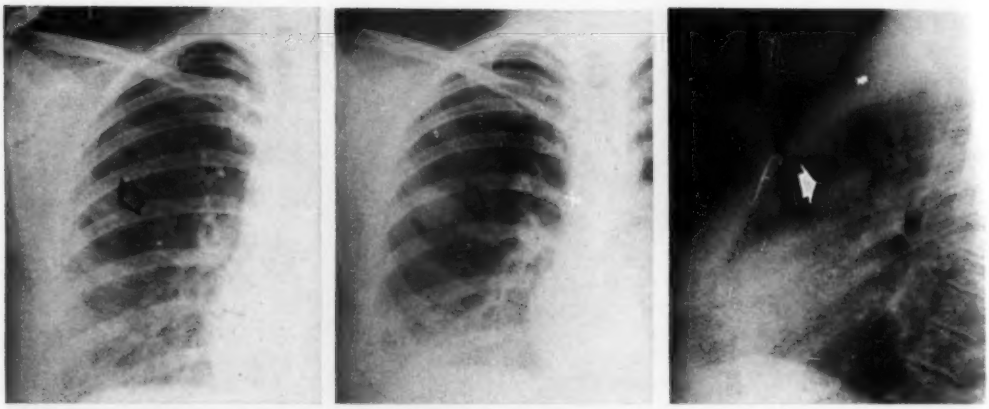

FIGURE 2 (Case 2). a. Small area of peripheral infiltration in upper right lung, at first examination. b. Later examination showing marked increase in the size of the lesion. c. Lateral roentgenogram showing the lesion anteriorly.

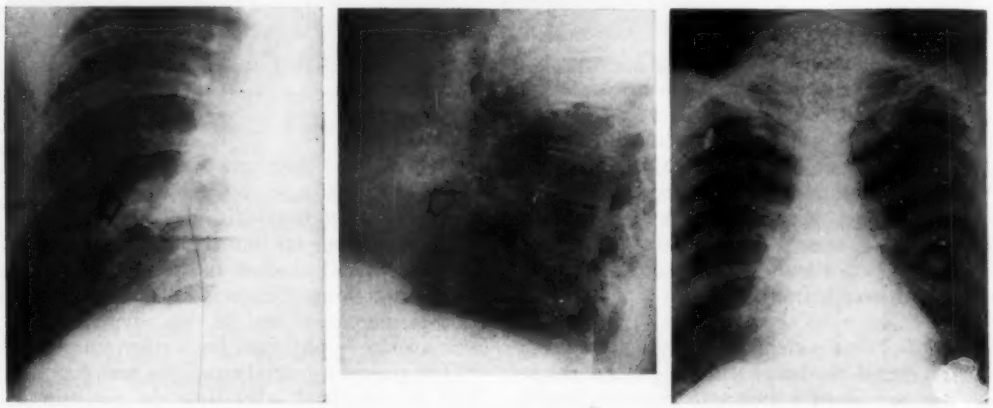

FIGURE 3 (Case 4). a. Area of infiltration just below the right hilus, one week after accident. b. Lateral roentgenogram showing lesion in the right middle lobe area. c. Film made one year prior to accident, no evidence of the lesion then.

space in an effort to prevent further shift. The procedure seems to have been worth while as the patient is now progressing nicely.

Case 5—The patient, a white male aged 51 years, one of the magazine reader patients, had taken heed of the warning of the cigarette story and requested x-ray examination. He had had numerous chest films made over the past several years because of multiple small calcifications scattered irregularly in both lungs. At one time someone had suggested that this calcification might have been due to tuberculosis; skin tests, however, showed it to be histoplasmosis. The new film showed a rounded shadow of increased density in the middle lobe area of the right lung, which had not been present in any of the previous films. Diagnosis of malignancy was suggested by the type of lesion and by the rapidity of its growth. The patient was immediately sent to the hospital for further observation.

Bronchoscopic examination was done and radiopaque oil was injected. Obstruction of the right middle lobe bronchus was demonstrated. The patient was being prepared for surgery but died suddenly and unexpectedly of massive hemorrhage. Postmortem examination revealed a bronchogenic carcinoma in the middle lobe

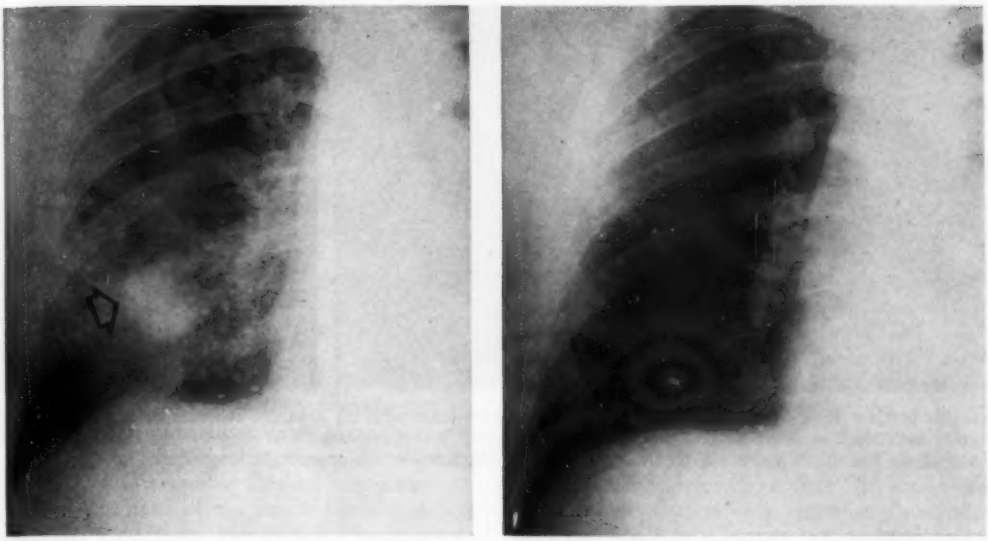

FIGURE 4 (Case 5). a. Roentgenogram made February 7, 1950, showing rounded lesion in the right lower lung. Small dense deposits are result of histoplasmosis. b. No evidence of the lesion in 1948.

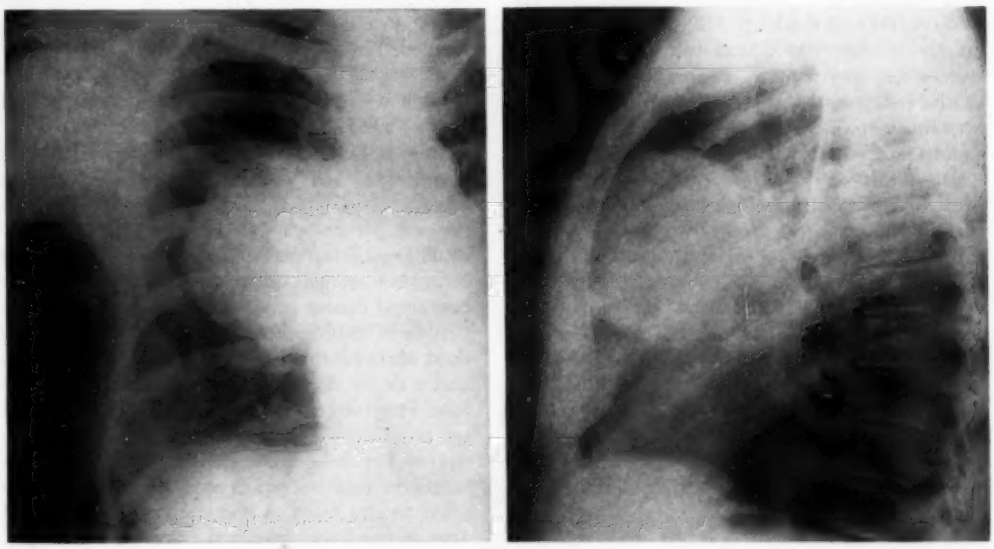

FIGURE 5 (Case 6). a. Large round area of increased density in right lung. b. Lateral roentgenogram showing the mass anteriorly.

with invasion of the adjacent hilus vessels, one of which had been ruptured by the invading neoplasm. (Figure 4.)

Case 6—The patient, a white female aged 61 years, had been in this country only a little over a year. An entry film was made before her admittance and this was reported to be negative. In response to a request to participate in a tuberculosis survey the patient had had a small

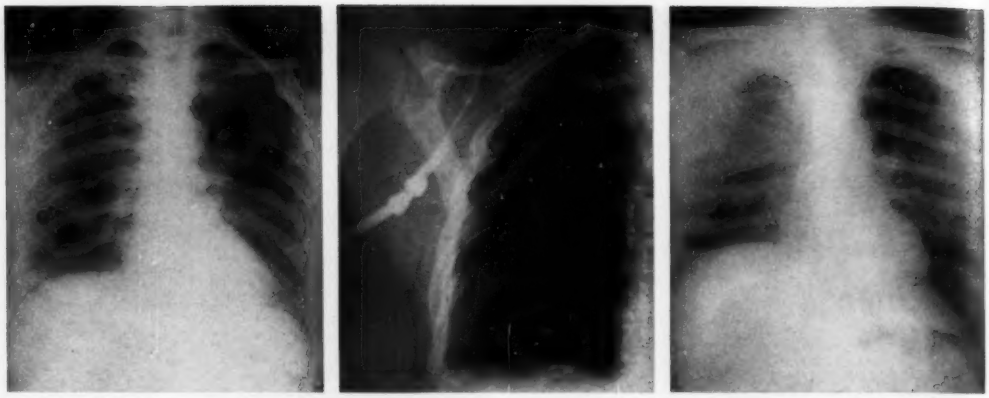

FIGURE 6 (Case 9). a. Routine chest roentgenogram on admittance with no apparent evidence of lesion. b. Venogram with block in lower neck. c. Roentgenogram of chest two months after first examination, showing destruction of the fourth rib posteriorly on the right side and cloudiness of the upper right lung.

chest film made. She was reported to have shown a half-dollar size lesion in the upper lobe of the right lung. As a result of this finding she was referred to a tuberculosis sanatorium for observation and work-up. No evidence of tuberculous activity was found but repeated films during her stay showed an increase in the size of the lesion and the possibility of malignancy was considered. During this time the patient did not have any particular complaint.

On admission to our hospital she had developed a dry hacking cough and was producing blood-streaked sputum. Film showed a very large mass in the upper right lobe anteriorly. This was smooth in outline and might have suggested a benign tumor but for the history of rapid growth. The patient was operated upon; right pneumonectomy was done and the pathologic report revealed bronchogenic carcinoma. This patient, incidentally, admitted excessive smoking, having used two to three packages daily for about 25 years. She is alive and apparently in good condition today. (Figure 5.)

Case 7—This patient, a white male aged 58 years, complained of shortness of breath over a long period of time but did nothing about it, attributing the condition to his heart. A survey film made in his home city revealed an area of cloudiness over the middle lobe area of the right lung. Lateral roentgenogram showed this to follow the upper margin of the middle lobe. The possibility of an interlobar effusion was suggested and the patient was advised to enter the hospital for study. Bronchoscopic examination was done, bronchial secretion was obtained and cytologic examination revealed the presence of carcinoma cells. The patient entered our hospital and right pneumonectomy was performed. He is progressing nicely.

Case 8—The patient, a white female school teacher aged 49 years, had been treated for pneumonia at home for about two weeks prior to admittance. She was progressing nicely when physical findings showed evidence of fluid in the left pleural cavity. This finding persisted. A diagnostic tap was done and bloody fluid was recovered which on microscopic examination contained cancer cells.

A film made after removal of some of the fluid showed the left lung partially collapsed, and a dense cloudiness was noted in the lower lobe. Positive cells in the pleural fluid is, according to many, a contraindication to surgery. The distress resulting from the fluid, however, was so severe that operation was resorted to in an effort to give relief. A specimen of the infiltrated area in the lower lobe was removed for biopsy. The pathologic report was undifferentiated carcinoma and epidermoid carcinoma of the lung. The patient was given palliative x-ray treatment with some relief. She is now back teaching school in spite of the far-advanced inoperable bronchogenic carcinoma.

Case 9—The patient, a white male aged 44 years, came to the hospital because of pain and

swelling in the right shoulder. This had been present for about a week and came on as the result of an accident. The patient was at home working on the storm windows when he lost his balance and started to fall. In an effort to save himself he grabbed the window sill with his right hand and in so doing severely wrenched his right shoulder. This was immediately followed by intense pain in the shoulder region. The next morning the shoulder was markedly swollen and the pain was persistent. He entered the hospital for examination of the shoulder area but roentgenogram failed to reveal evidence of fracture.

Routine admitting chest film was indefinite but a lordotic film showed pathologic changes in the upper right lung. The patient's condition became progressively worse, the swelling increased and extended upward to the neck. A clinical diagnosis of a vascular block was confirmed by venogram with none of the radiopaque material following the normal course back to the heart, although some of it did pass posteriorly apparently to the posterior spinal vessels. Operative procedure for relief of the obstruction was unsuccessful. Evidence of malignancy was found in the glands of the neck. A later film of the chest showed increasing evidence of infiltration in the right upper lung and partial destruction of one rib was noted. A diagnosis was made of bronchogenic carcinoma, inoperable because of extensive vascular block and metastases to the neck. The accident was apparently only incidental to the previously unsuspected neoplasm. (Figure 6.)

Case 10—A white male aged 52 years sought dental treatment because of a severe, persistent pain in his teeth. He consulted several dentists without relief. He then began complaining of swelling in the neck made apparent because the neck band of his shirts was becoming tight. He also had an additional complaint of dizziness on bending his head forward.

Physical examination after coming to the hospital revealed generalized neck swelling, palpable glands in the neck and engorgement of the vessels of the neck and upper chest. Clinical diagnosis of venous obstruction was finally proved to be in the superior vena cava. Admitting chest film showed a large area of infiltration in the upper right lung with slight cardiac shift to the right, an indication of atelectasis. Bronchoscopic biopsy and biopsy of a gland from the neck resulted in a diagnosis of bronchogenic carcinoma. A later film shows evidence of destruction of a posterior rib section. The condition was believed inoperable because of the extensive vascular involvement and metastases. The patient is still alive but in poor condition.

In presenting these cases I have tried to demonstrate some of the problems which face the radiologist when confronted with the possibility of bronchogenic carcinoma. I do not advocate the use of x-ray to the exclusion of other procedures; rather I should like to encourage the frequent and careful bronchoscopic examination with biopsy, if possible, or with study of bronchial secretions for cell study, if obtainable. The utilization of all these procedures, particularly when evidence of pathology is found on the film, should help make earlier diagnoses and enable earlier institution of proper treatment.

Case Report

Multiple Embolization from Intracardiac Thrombus

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THIS patient, as will be described in the history, had a severe chronic mitral stenosis with mild regurgitation which had of necessity caused pulmonary hypertension, auricular fibrillation and moderate left auricular enlargement.

During the previous four months he had developed complications suggesting either (a) a subacute bacterial endocarditis superimposed on the old chronic rheumatic endocarditis or (b) a recurrence of the rheumatic endocarditis. (c) A more probable condition under consideration was an intracardiac thrombus in the auricular appendix which was releasing emboli and sending these through the circulation, implanting them into the extremities, viscera and brain.

Upon reconsidering his physical findings two processes in particular are responsible for defective valve function in this patient as is true in all rheumatic mitral disease: (1) fusion of the cusps at their edges (causing both stenosis and regurgitation) and (2) fusion and shortening of the chorda tendineae.

In very chronic cases the fusion of the cusps is so pronounced that it simply leaves a funnel with a narrow ostium causing either a buttonhole type opening or a fish mouth type opening.

In mitral stenosis the left auricle and right ventricle bear the brunt of the burden.

In mitral stenosis and regurgitation, the left ventricle, left auricle and right ventricle are involved. Since both defects (stenosis and regurgitation) are generally combined, the effects on the heart depend in part on the relative amounts of stenosis and regurgitation and in part on the absolute degree of valvular disease.

Course and prognosis—The eventual prognosis in each case of mitral stenosis varies according to the extent of the lesion and the complications.

A damaged mitral valve is much more frequently the site of repeated rheumatic infection in youth and, if there is not much mitral stenosis, of bacterial endocarditis in youth and middle age. In marked mitral stenosis in youth, auricular fibrillation follows in over half the cases.

CAUSES OF PERIPHERAL ARTERIAL EMBOLI FROM THE HEART

1. The commonest cause of mural thrombi in the heart is myocardial infarction, fresh or old, involving essentially always the left ventricle and responsible for occasional peripheral arterial embolism, cerebral, renal, mesenteric or blocking the circulation to arm or leg.

2. Rheumatic heart disease ranks second with thrombosis on the wall of the left auricle or its appendage, especially in the presence of auricular fibrillation which so commonly complicates mitral stenosis. It is now certain that the heart itself is more frequently the site of origin of thrombi than was formerly supposed. Intracardiac thrombi most often form in the left side of the heart and emboli, when released, go out through the systemic circulation with subsequent blocking of small arteries in the extremities, viscera or brain.

3. Bacterial endocarditis or verrucous endocarditis as seen in Libman-Sacks disease is the next most common cause of important intracardiac thrombosis in such cases, located chiefly on the valves giving rise to multiple emboli which lodge in the lungs.

In an article entitled "Thromboembolism associated with auricular fibrillation," J. M. Askey and C. B. Cherry stated:[1] "About three times as many patients with rheumatic heart disease and auricular fibrillation have intracardiac thrombi as those with normal rhythm. . . . The arrhythmia, and not factors associated with age, is the main factor causing the thrombus. According to the available data, auricular fibrillation is responsible for extra clot

formation in 25 to 30 patients of 100 with rheumatic heart disease. The prevention of this formation of antemortem clots could theoretically be accomplished by continuous anticoagulant treatment following the establishment of the arrhythmia. . . . The risk of thrombus formation, with a simultaneous increase in the risk of embolism, begins as soon as auricular fibrillation becomes established." Continuous anticoagulant treatment is apparently indicated in patients with rheumatic heart disease and auricular fibrillation who have repeated episodes of thromboembolism. But from a study of 15,000 cases, these authors comment that "the prevention of formation of these additional clots depends on the administration of anticoagulants at the time of the change from normal rhythm to auricular fibrillation. . . . This period of transition is rarely observed."

In considering our patient we were confronted with several difficult decisions:

1. It was obvious that anticoagulant therapy for the prevention of the formation of these additional clots at the period of transition was not the question at this particular time.

He was throwing emboli from a thrombus in the heart and our primary therapy with DICUMAROL® immediately following the embolectomy proved to be a serious problem after about one week. Dicumarol had to be discontinued. After several weeks when the patient again began to show evidence of embolic episodes, he was given follow-up therapy with dicumarol while at home, but emboli appeared in rapid succession in spite of the anticoagulants.

2. Another difficult problem was the cause of the septic type of temperature which persisted in spite of all available antibiotics.

a. Did he have a subacute bacterial endocarditis implanted on a chronic rheumatic endocarditis in spite of repeated negative blood cultures?

b. Or was it a reinfection of rheumatic endocarditis implanted on top of the old involvement?

c. Or were we dealing with an infected mural thrombus or a thrombus in the auricular appendix from which septic emboli were being expelled into the general circulation?

THE repeated negative blood cultures, a sustained high sedimentation rate and a lack of response to all antibiotics pointed to the probability that he had an active rheumatic mitral endocarditis and because of the accompanying auricular fibrillation he must have a thrombus in the left auricular appendage; and this thrombus was the source from which the emboli were being thrown into the various organs. Therefore, if the patient was to be spared a probable fatal embolus, the seat of the thrombus and, if possible, the thrombus itself must be removed and if the patient's condition permitted, the mitral valve opening must be widened at the same time. Another stumbling block to the idea of the operation presented itself at this time. In the last review of the cases submitted for commissurotomy, Dr. Bailey and his group stated[2] that the operation is done only in carefully chosen cases. Recovery is most likely in cases of mitral stenosis with pulmonary hypertension where (1) rheumatic disease is quiescent; (2) the valve is primarily stenotic (with little incompetence); (3) sinus rhythm is normal and (4) the left ventricle is not appreciably enlarged.

The prospects are less encouraging for patients with (1) recurrent blood stains in sputum, (2) arterial emboli or (3) auricular fibrillation without heart failure.

The only favorable criterion in this case was the fact that the patient had a pure mitral stenosis; otherwise, he was fibrillating. He had emboli and probably an active rheumatic involvement, and the left ventricle was appreciably enlarged. In spite of all these contraindications, we had no alternative but to try to get ahead of the next embolus and Dr. Bailey consented to take him for surgery.

The patient was hospitalized on July 25, 1950, at the Hahnemann Hospital in Philadelphia where he was observed for several days and then operated on (August 11, 1950) by Dr. Charles Bailey with the following preoperative diagnosis: Multiple embolization following chronic auricular fibrillation since 1940. Mitral stenosis.

OPERATIVE PROCEDURE

Anesthetic: PENTOTHAL SODIUM®, ether, oxygen, intravenous procaine.

With the patient in the lateral position the usual curved posterolateral incision was made. The left fourth intercostal space was opened widely from the sternum to the vertebrae and the lung was permitted to collapse. Five cubic centimeters of 5 per cent procaine were injected into the pericardium and after five minutes the pericardium was incised posterior to the phrenic nerve. The auricular appendage was found to be large. It was injected with 0.5 per cent procaine solution about its base. A #1 atraumatic silk suture was placed as a purse-string about the base of the appendage. A Satinsky clamp was placed about the appendage and a portion of the tip was amputated. It was then seen that there was a sizeable, loosely attached soft thrombus in the appendage. This was easily removed and then sent to the laboratory for examination.

The right index finger was inserted without difficulty through the open appendage, the clamp being removed as the finger was passed. There was practically no bleeding during this maneuver. The valve was palpated and found to contain considerable calcium and to be very narrowed. The finger

was then withdrawn and the clamp was re-applied. Then a special commissurotomy guillotine was placed on the right index finger, being worn between two rubber gloves. The finger was then reinserted into the auricle and this time the knife was inserted into the valve orifice without difficulty; the valve was cut first on its lateral commissure and then the medial commissure. Three cuts were made laterally and one medially. A considerable opening was produced by this maneuver. About 1½ fingerbreadths would span the mitral orifice.

The finger and instrument were then withdrawn, the purse-string ligature was tightened and the cut end of the appendage was oversewn with fine white cotton. The pericardium was flushed with saline, the cut edges were partially repaired, the pleura was drained with a #24 urethral catheter, and the chest wall was closed in the usual manner using pericostal chromic #2 catgut and #1 for the muscle. The skin was closed in the usual manner, using continuous wire suture.

The present outline is as follows: The improvement in his mitral valve function should be persistent. Although I do not believe he will ever be able to do heavy physical labor, I feel very confident that he will be able to live a reasonably active and productive life. The removal of his auricular appendage should permanently protect him against any further embolization and I have great hopes that his mental condition will improve in time.

Naturally, his fibrillation will persist and I do not see how he can avoid the maintenance use of digitalis.

One complication which we have been unable to explain was the gastric hemorrhage which occurred on July 25, 1950. A series of roentgenograms of the gastrointestinal tract taken prior to operation was entirely negative for ulceration.

Tissue submitted to the laboratory following surgery consisted of (1) left auricular appendage and (2) a large thrombus (a culture of the thrombus was not done).

THE following is a summary of five admissions from July 30, 1941, to July 25, 1950, to the Mountainside Hospital of a 50-year-old white painter who has had known rheumatic heart disease for many years.

First admission (July 30, 1941)—He entered with a history of chronic pansinusitis, more marked in the right ethmoid and the left antrum. Examination of the heart at this time revealed a sinus arrhythmia, a systolic and diastolic murmur at the apex. He had an antrotomy and turbinectomy under local anesthesia. His recovery was uneventful.

Second admission (March 2, 1942)—He entered with a history of a severe cramp in the left leg, sudden episode of difficulty with speech, excess salivation and incoordination of his fingers. His lungs were clear, but he was in auricular fibrillation with a mitral diastolic and systolic murmur, and a questionable cerebral embolus. The condition, however, cleared in a short time.

Third admission (March 28, 1950)—This time he was admitted with a history of having had sudden severe pain behind his left knee at 4:00 A.M. with numbness and tingling felt down to the toes. He was temporarily relieved by 100 mg. of DEMEROL but five hours later he had a recurrence of numbness and was admitted to the hospital with a diagnosis of common iliac artery spasm or embolism. At this time he was on a maintenance dose of digitoxin (0.1 mg. daily).

Physical examination—He was perspiring and appeared acutely ill. His lungs were clear. The heart was in auricular fibrillation. There was a presystolic thrill and a presystolic and systolic mitral murmur. Blood pressure was 142/82. There was slight tenderness to deep palpation in the left lower quadrant. There was a right inguinal hernia. Both lower extremities were cold up to the mid-tibial region but the left was more moist than the right. Neither dorsalis pedis pulse was palpable. He was treated immediately with analgesics and anticoagulants, given heparin and dicumarol. Spinal block at the level of L 4 gave dramatic relief of pain in eight seconds but the pain and numbness returned after about one hour and embolectomy became necessary. He was anesthetized to the level of T 10 at 1:00 A.M. of the day of admission. An embolectomy was performed which yielded large thrombi from both common iliac arteries. Following this procedure there was some immediate pulsation of the dorsalis pedis on the left. Subsequently there was a return of color and warmth to both extremities and a gradual return of pulsation of the dorsalis pedis vessels.

The patient's postoperative course was complicated by abdominal distention which was relieved. On his fifth postoperative day, he had a sudden episode of sweating, cyanosis, tachycardia, epigastric pain, râles in his chest and it was felt that he had thrown multiple pulmonary emboli. He was continued on dicumarol at this time and the highest recorded prothrombin time was 32 seconds. He recovered from the episode of pulmonary emboli but on his twelfth postoperative day, he had marked abdominal distention, profuse perspiration, tachycardia and a moderate sized perirectal mass. It was felt that this mass was retroperitoneal and probably a hematoma. His hemoglobin dropped to 7.7 gm. and his red blood cell count dropped to 2,640,000. The dicumarol was stopped, and whole blood plus vitamin K was given. The mass gradually disappeared. His subsequent course was uncomplicated and he was discharged on his twenty-eighth hospital day.

Fourth admission (May 27, 1950)—At this time he entered with a history of generalized abdominal pain of 24 hours' duration, fever and chills. Physical examination revealed a temperature of 102° F. He again appeared acutely ill. His lungs were clear and the heart was again in auricular fibrillation with typical presystolic and systolic mitral murmur. Blood pressure was 120/88. There was moderate tenderness in the left upper quadrant. The spleen was palpable about 2 fingerbreadths below the costal margin. The impression at this time was probable embolic phenomena to the spleen. Hemoglobin was 11.5 gm., red blood cells 4,420,000; white blood cells 8,350; polys 76 per cent; blood culture was negative.

He was treated with penicillin and streptomycin

with an adequate response. His temperature returned to normal by the seventh day. On his seventeenth day of hospitalization, he had sudden profuse sweating, Cheyne-Stokes respirations, right facial paralysis and difficulty with speech and swallowing. After two days he developed a right hemiplegia. He was treated with oxygen, papaverine, penicillin and streptomycin and by the twenty-ninth day his paralysis had cleared considerably; although the swallowing reflex returned, his speech was still thick. He was discharged improved on his forty-second hospital day.

Fifth admission (July 25, 1950)—He had done quite well at home on a maintenance dose of digitoxin and penicillin until one week before admission when he had a sudden onset of gastrointestinal pain. He was relieved by an enema which revealed black tarry stools. On the morning of admission to the hospital he had another attack of flushing of the face and neck, dyspnea, weakness, flaccidity and a semicomatose condition. His pulse was 100 and irregular. He was cold, wet and cyanotic. Fine râles were noted in the base of the left lung. His heart was in auricular fibrillation and there was a loud rough presystolic and systolic murmur. Blood pressure was 122/84. His liver was down 1½ fingerbreadths and the spleen was palpable 1 fingerbreadth below the costal margin. Reflexes were hyperactive on the right side. Hemoglobin was 9.2 gm.; red blood cells numbered 3,200,000; white blood cells 17,700; sedimentation rate 133 mm. He was treated with bed rest, penicillin and whole blood transfusions, with some improvement. On several occasions he had dizziness, sweating and nystagmus, but these episodes were of a transitory nature. He improved gradually and on his eleventh hospital day he was taken by ambulance to Hahnemann Hospital in Philadelphia on the service of Dr. Charles Bailey.

REFERENCES

1. Askey, J. M., and Cherry, C. B.: Thromboembolism associated with auricular fibrillation; continuous anticoagulant therapy. J.A.M.A. 144:97-100 (September 9) 1950.
2. Glover, Robert P., O'Neill, Thomas J. E., and Bailey, Charles P.: Commissurotomy for mitral stenosis. Circulation 1:329-342, 1950.
3. White, Paul: Heart Disease: Mitral Valve Disease and Auricular Fibrillation. New York, The Macmillan Company, 1946, pp. 606-620; 886-889.
4. Soulie, Chichie, and Papanicolis, J.: Organized parietal thrombosis in the cavities of the heart. Arch. d. mal. du coeur 42:669 (July) 1949.

"FINE CHEMICALS," by Walter Murch

(Betty Parsons Gallery)

GENERAL PRACTICE *Review*

To provide the general practitioner, as well as the specialist with concise, readily available information on the latest, proved methods of treatment of conditions commonly encountered in an average practice, POSTGRADUATE MEDICINE *offers this department to its readers. It is not, of course, intended to present these discussions as the only acceptable therapeutic procedures to be used, but rather to offer simple regimens and recommendations based on the extensive experience of the physicians who prepared these summaries.*

Treatment of Lame Backs

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OBER

MANY patients with lame backs are treated by the family physician and most of them recover under his care. The patient with an acute lame back is better off in bed. If pain is severe, sedatives will be indicated, the type being determined by the severity of the condition. Salicylates, codeine and even morphine may be necessary. Sedatives relieve not only pain but also spasm of the back muscles. It must be remembered that muscle spasm is an effort on the part of nature to splint the back and that such spasm is also a source of pain. The bed should be firm and flat. A board placed on the spring and under the mattress will help many patients; on the other hand, some cannot tolerate bed boards. A board under an innerspring mattress is useless because the spring is on top of the board and not under it.

Application of heat by means of hot packs, electric pad (low heat) or a heat lamp is soothing and helps to relieve pain and muscle spasm. Prolonged heat increases congestion and often causes more discomfort. As a general rule, heat should be applied for about 15 minutes and repeated at four hour intervals.

The back can be protected more or less by a 10 inch wide Ace or similar bandage or by a scultetus binder. These should be applied from below the trochanters and up to the breast. The patient should be allowed to assume the position of greatest comfort. When he is supine a large pillow beneath the knee will help to relieve some of the sciatic pain.

In the less severe types of backache which are sudden and not too incapacitating, adhesive plaster strapping is often helpful. The skin should be painted first with compound tincture of benzoin and the plaster applied while the patient is standing and holding onto the back of a chair. Strips of plaster 2 or 3 inches wide are applied from the anterior superior spine line transversely across the buttocks at the level of the coccyx. One end of the plaster is stuck to the skin, the right hand holds the plaster tight, and the left hand compresses the buttock on the opposite side. The plaster is then pulled tightly across the back and stuck to the opposite side. After the first strap is in place several others are applied in overlaps up to the tenth rib. A second layer is put on over the first com-

plete strapping in order to give more body to the support. The strapping may be changed when it becomes loosened.

In prolonged cases of backache a well fitting corset is the most useful of all supports if it is properly constructed. A back-lace corset is to be preferred because the steels can be bent to follow the contours of the lumbar spine and the buttocks. The corset should give an abdominal lift and should not be so tight over the iliac crests as to ride up in front. The great art in corset fitting is *to let the crests of the ilia out into the cloth.* A well made corset should fit the contours of the back at all times.

Steel braces will fit when the patient stands, but not when he sits, often digging into the lumbar muscles and causing spasm. This may be quite uncomfortable. Low pelvic belts are not efficient enough because they do not protect the muscles which control the movements of the spine. These belts are usually used as tight straps which depend on the tightness to hold joints together.

The problem in the lame back is to secure relief of pain and muscle spasm and *to restore the physiologic curves of the spine.* A well fitted corset will do more to accomplish this result because the corset can be readjusted to fit the contours of the back and abdomen as the spinal curves return to normal.

The ambulatory lame back patient should be given advice about stooping, lifting and twisting. Any of these movements will increase the symptoms and, if the patient is symptom-free, may cause a recurrence, especially if nothing has been done to restore the patient's musculature after he has recovered from an attack.

The first rule in treating any joint is to impress the patient with the fact that any act which causes pain is bad. He must learn to live so that he does nothing which will cause harm during the period of convalescence.

The proper way to lift an object is to do so with the knees flexed, preventing the posterior thigh and leg structures from pulling on the low back. Individuals who have short posterior leg, buttock and thigh muscles and fasciae are restricted in forward bending so that there is increased leverage on the lumbosacral and sacro-iliac regions. This state of affairs makes these patients more vulnerable to backache.

EXERCISES

After the pain and muscle spasm have subsided, it is necessary to restore the muscles which support the back by special exercises. Contracted fasciae and muscles should be stretched out and, after these two things have been accomplished, exercises to correct bad posture are prescribed.

The stretching of the tight fascia lata is performed in one of two ways. The patient stands with his side toward a table, about 30 inches away from it. He grasps the edge of the table with one hand and leans his hip toward the table so that his body and hip are curved. The knees are kept straight. He should hold this position for three or four seconds and repeat five times twice a day. The stretching should be steady and the number of stretches gradually increased to 15 twice a day until the abduction test is negative. The same stretching maneuver may be done standing in a doorway by placing the right foot against the door frame and leaning the opposite shoulder against the opposite door frame and then sagging the hip on that side toward the frame. *This stretching exercise should not be done if there is pain in the sciatic nerve.*

When the abduction test is negative the calf muscles may be stretched by standing on a block of wood an inch high, placing the ball of each foot on the block and the heels on the floor.

The hamstrings may be stretched by placing one extended leg on a low stool and then leaning the body forward, holding the position three to five seconds, alternating legs for five stretches each and gradually increasing up to 15.

One exercise which is frequently prescribed is forward bending of the trunk when the legs are straight. This exercise should not be done as it may cause a recurrence of the trouble.

Where there has been interference with joint function there has been, as a result, a disturbance of the muscles controlling that joint. Therefore exercises must be prescribed which will restore these muscles to a normal function or there will be recurrence of joint disability. The chief supporting muscles of the back are the abdominals and the glutei maximi, and if sciatic pain has been present there will be considerable atrophy of the gluteus maximus. Patients who sit long hours and who have loss of tone in one of the glutei are apt to have a recurrence of the sciatic pain for two reasons: (1) there is not enough muscle padding to protect the nerve, and (2) the pelvis is lower on that side, producing an unequal pull on the lumbar spine. In such cases the patient should have a pad under the pelvis on that side in order to keep the pelvis level and the spine plumb.

A great many patients have lame backs from a short leg or inequalities in the pelvis which produce a functional curve of the spine. The spine is made plumb by blocking up the heel of the shoe on the side of the convexity of the curve until it is straight.

If the calf muscles are short on passive dorsal flexion of the foot with the knee extended, the heels of the shoes should be raised enough to compensate for such shortening. In many instances of moderate sciatic pain, raising the heel on the opposite side will give relief, sometimes in a few days.

The first two exercises prescribed are:

1. Voluntary squeezing of the buttock muscles together and holding them for three or four seconds, then relaxing gently, repeating for 10 times, three or four times a day. This procedure is increased to 50 times twice a day. It is less likely to cause back pain if the patient lies on his back.

2. The abdominal muscles are exercised by having the patient raise his head and shoulders from a flat surface a short distance (3 or 4 inches), holding this position for three or four seconds and then relaxing, repeating 10 times three or four times a day and increasing to 50 times twice a day.

The stretching and muscle exercises are to be continued for several weeks or until all the shortened structures are stretched, the muscles restored to normal and the bad posture has been corrected.

SUMMARY

1. It will be seen from the foregoing that there are many conditions besides a ruptured nucleus pulposus that cause painful backs.

2. The simple therapeutic measures outlined will relieve most of the lame backs. Those not relieved are usually referred to a specialist.

3. Exercises are taboo when pain is present.

4. Each patient presents a different problem in management.

5. All lame backs which do not recover rapidly need a thorough general, local and adequate roentgenologic examination.

Ambulatory Management of Minor Thoracic Traumas

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THE majority of individuals who have sustained a thoracic injury are sufficiently disabled to require treatment in a hospital. There is an appreciable number, however, whose injuries are not crippling but result in considerable discomfort. Such lesions consist, for the most part, of minor hematomas of the thoracic wall, contusions, subperiosteal hemorrhages, simple fractures of the ribs or cartilages and small post-traumatic effusions or pneumothoraces. Frequently, the symptoms may not become obvious immediately; we have seen many patients whose injuries were several days old and who came to the office because of persisting minor disability. This may follow an industrial accident and often can be satisfactorily treated on an ambulatory basis. The patient either continues on the job or convalesces for a few days at home.

Even though some individuals are able to walk into an office immediately after sustaining thoracic trauma, those who are in shock, those who have obvious evidence of multiple rib fractures or "flail" segments of the thoracic wall, and those who show a considerable hemothorax or subcutaneous emphysema should be hospitalized at once. A suspicion of myocardial contusion or traumatic pericarditis is likewise an indication for hospitalization. This will be suggested by the type of trauma (i.e., "steering wheel" injury) and the presence of a friction rub, tachycardia (rarely bradycardia) or disturbances of rhythm.

Pneumothorax may or may not be an indication for hospitalization. The size of the pneumothorax, the symptoms, the length of time it has been present and judgment as to whether or not the

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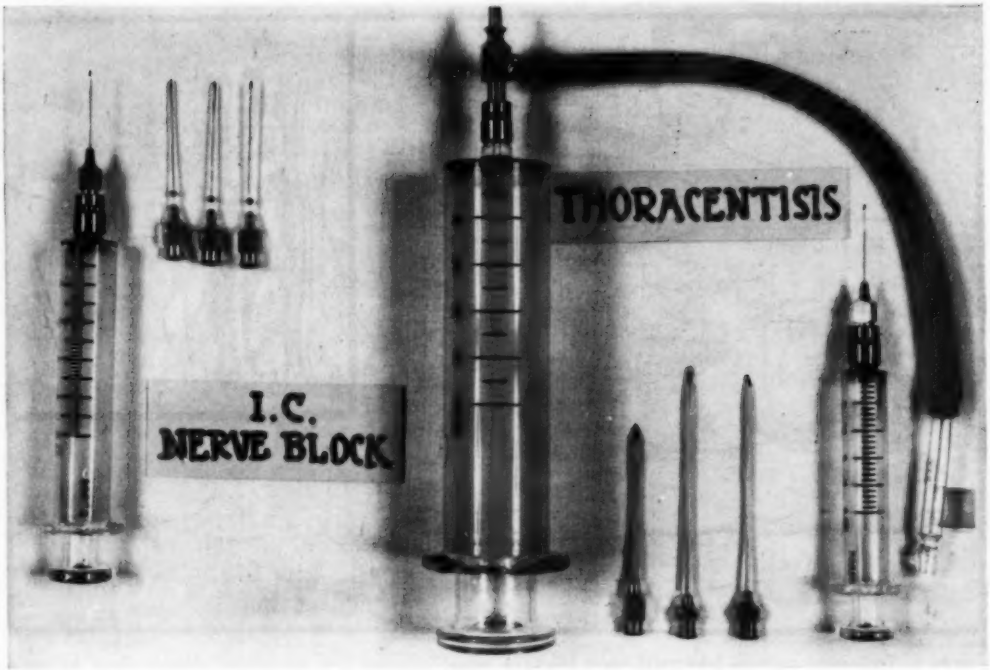

FIGURE 1. Basic equipment for regional intercostal nerve block and for thoracentesis. A. *Intercostal nerve block*—10 cc. Luer syringe and 26g x 1″ needle for preliminary injection. Three 22g x 1½″ needles for nerve block. If each needle is left temporarily in place after injection the inferior edge of the adjoining rib can be more readily found with the second needle. B. *Thoracentesis*—5 cc. Luer with 26g x 1″ needle; 50 cc. Luer with 3-way stopcock, 8″ rubber tubing and glass connector, short bevel aspirating needles; 17g x 3″; 15g x 3″; 13g x 2″.

symptoms have increased are factors to be taken into consideration. A small static pneumothorax can be satisfactorily treated in the office.

To safeguard the patient's health as well as for the medico-legal protection of the attending physician and the company, several steps are necessary for proper evaluation of the patient who presumably will be treated on an ambulatory basis.

1. *Careful history of the injury*—This should include the position of the patient, the instrument causing the injury, the force of the blow or distance of the fall. If the injury is several days old, one should determine whether the symptoms are becoming progressively worse or whether they are stationary and merely nagging in character. The symptoms usually encountered will be pain, discomfort, tightness in the chest, dyspnea on exertion, fatigue and, perhaps, low grade fever.

One should remember the possibility of a pathologic fracture in which pain and evidences of rib fracture develop following slight trauma.

2. *Physical examination*—Careful auscultation of the heart for friction rub or possible murmurs is important. The blood pressure should be taken and the pulse counted for a sufficient time to pick up irregularities. The areas of pain or skin tenderness on the chest should be carefully outlined. Physical examination of the lungs may show dullness (fluid) or hyper-resonance (pneumothorax). The breath sounds may be distant, bronchial in character suggesting atelectasis, or there may be localized râles (retained secretions or pneumonitis). The posture should be noted and tenderness over the spine should be looked for. If the injury is around the shoulder, the range of motion must be evaluated as well as the possibility of brachial plexus or major vascular injury. Orthopedic consultation may be desired.

3. *Fluoroscopy if available*—The presence of intrapleural fluid or a pneumothorax can be assessed. The heart size and shape should be noted. The motion of the diaphragms can be evaluated and suspicion of diaphragmatic hernia confirmed.

4. *Roentgen examination*—This is of vital importance. Frontal and lateral films should be taken both by regular technic and either with rib detail

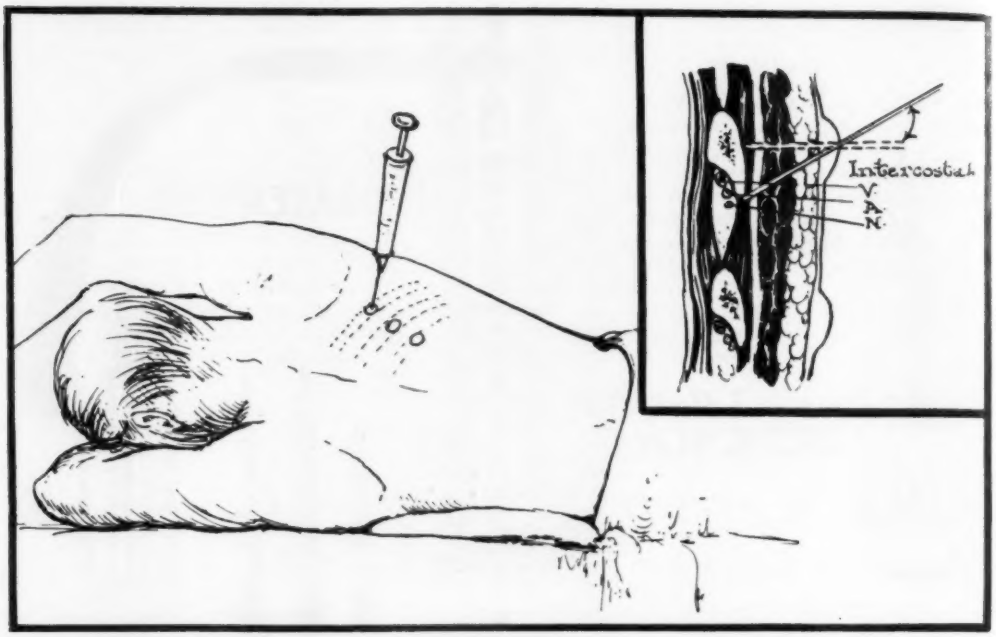

FIGURE 2. Technic of regional intercostal nerve block: A wheal is raised over the center of each rib at its angle. Insert shows the point of the needle being directed so that it will just clear the inferior margin of the rib.

or with the Potter-Bucky grid. If suspected rib fractures are lateral, oblique films will be necessary. All rib fractures should be clearly delineated. Essentially, it makes no practical difference whether four or five ribs, for example, are fractured. It is of importance, however, if attorneys become concerned with the case.

SYMPTOMATIC TREATMENT IN THE OFFICE

Pain, tightness or thoracic wall discomfort and cough are the most common presenting symptoms. These may come from any cause such as contusion, hematomas, fractured ribs, etc. In general, the best means of relief is a regional block of the intercostal nerves. This is frequently supplemented by local infiltration of the contused area or of the sites of fracture if these can be accurately located.

Technic of nerve block (Figures 1 and 2)—One per cent procaine solution is employed and from 5 to 10 cc. is injected into each thoracic nerve. The patient is placed in the lateral recumbent position with the injured side uppermost and the scapula drawn well forward. The area of pain or discomfort having been outlined, a sufficient number of nerves are injected to include at least two nerves above and two below the painful area.

The ribs are palpated at the edge of the erector spinae muscle. By means of a fine needle, a series of small wheals is produced over the center of each rib, the needle is advanced to the periosteum and a small amount of procaine is injected. A longer, short bevel needle is then advanced through the wheal to the posterior surface of the rib with the bevel directed cephalad. By gentle probing while tipping the point of the needle caudad, the end is slipped past the inferior margin of the same rib and advanced approximately 3 mm. The plunger is slightly withdrawn, although intercostal vessels are practically never traversed by this technic. The procaine is then injected. This maneuver is then repeated until the requisite number of nerves have been blocked.

Further injection at the fracture site may then be performed if desired.

Indications for adhesive strapping—Usually, this method is not condoned in the treatment of severe pain from extensive thoracic trauma but strapping does have its place in office practice. There are patients who have a rather diffuse discomfort, residual diaphragmatic irritation or small thoracic wall hematomas which are causing symptoms. A simple test will help with the decision in most instances as to whether strapping will be of aid in controlling the discomfort.

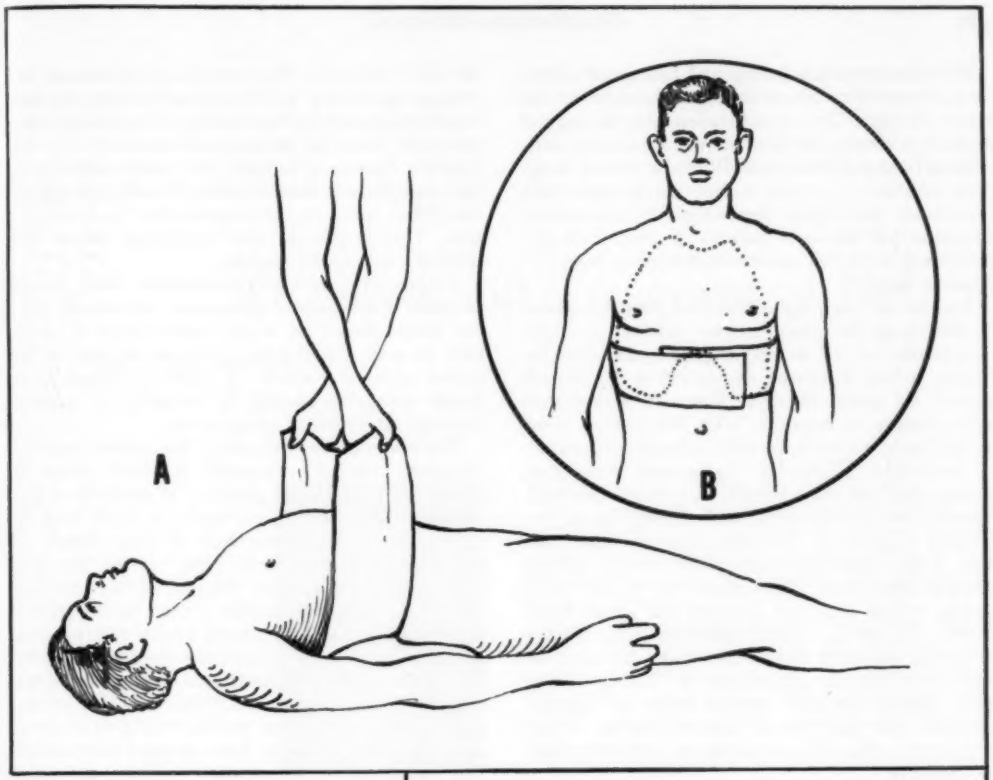

FIGURE 3 (after Blades). See text.

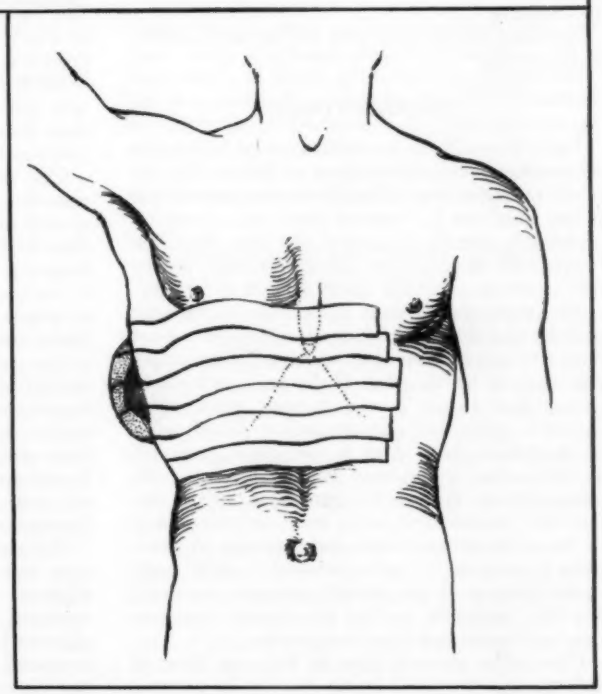

FIGURE 4. Protection of a hematoma of the thoracic wall. A thick sponge rubber is molded over the hematoma. This is held in place and the hemathorax is partially immobilized by overlapping adhesive strips applied in forced *expiration* and extending *past* the midline, both front and back.

With the patient standing and facing the physician, the operator places the open hands over the lower rib cage. During exhalation, the rib cage is pushed in firmly and held in the expiratory position and the patient is asked to take several long, deep breaths. A certain number of patients will experience immediate lessening of discomfort; strapping will aid these patients. If there is no improvement with this maneuver, strapping practically never helps.

Technic of strapping—The most effective means of strapping the chest is, we believe, a slight modification of the technic originally described by Blades. If hair is present, the patient is dry shaved around the lower rib cage. The skin is prepared with tincture of benzoin. With the patient lying on his back, a four-inch width of adhesive plaster or preferably "Elastoplast" is brought from posteriorly and strapped firmly in a circumferential manner over the chondral arch during forced expiration (Figure 3). For hematomas in other portions of the chest wall except at the bottom, several strips of adhesive or "Elastoplast" can be used with sponge rubber or gauze covering the actual hematoma (Figure 4). These adhesive strips should be placed at least two inches past the midline both anteriorly and posteriorly. If "Elastoplast" is used, regular adhesive plaster must be applied vertically over the ends to prevent slipping. If the hematoma is fluctuant it should be aspirated prior to strapping.

Adhesive strapping may be left on for from five to seven days.

THORACENTESIS

Indications—Physical examination and roentgen studies may reveal the presence of fluid and/or air in the pleural cavity. It should be remembered that if any fluid can be detected from 300 to 500 cc. probably is present. In general, the lung should be re-expanded early so that the intrathoracic organs will return to a normal status as soon as possible.

Pneumothorax—If there is less than 10 per cent collapse and the patient has no symptoms several days after injury, close observation and fluoroscopic check would be indicated. If the pneumothorax is greater than 10 per cent in amount, thoracentesis should be performed and the patient should again be checked in from three to four days. A second aspiration may be indicated at that time but if the pneumothorax persists, the patient should be immediately hospitalized and a small catheter placed in the chest with a water seal drainage. A good place to aspirate for pneumothorax is either high in the axilla or in the second interspace anteriorly but this should be verified by physical examination and fluoroscopy prior to aspiration.

Fluid—The physical signs of fluid are those of dullness and decreased breath sounds. In general, the best place for thoracentesis is posteriorly although again this should be verified by physical examination and roentgenoscopy. It is possible that the fluid may be encapsulated laterally. If the posterior approach is used, the usual difficulty is that aspiration is done too low. Usually the eighth intercostal space in the scapular line is a reliable spot. This is one or two interspaces below the inferior angle of the scapula.

Technic (Figure 1)—Thoracentesis must always be done under aseptic precautions and sterile rubber gloves should be worn. Sterile saline is necessary to wash out the large syringe in case it becomes jammed because of fibrin or blood clot. Sterile test tubes should be available for culture purposes or cytologic examination.

The center of the dull area is determined and the interspace carefully palpated. A small wheal is raised and 1 per cent procaine is injected as the needle is advanced. If the needle is kept close to the top of the rib there will be little chance of puncturing an intercostal vessel. Extra procaine should be injected just outside of the parietal pleura. A short bevel needle is then placed on the small syringe and the pleural cavity gently aspirated. If no fluid is obtained, the needle should be advanced in different directions. Air bubbles mean that the lung has been punctured. If bloody serum is aspirated and the flow suddenly stops it is probable that clots or fibrin have clogged the needle. Graduated needles up to size 13 gauge can then be inserted without making a skin incision and the three-way stopcock and large syringe employed. With the large needle, considerable negative pressure can be exerted which may break up small clots although, usually, *gentle suction is a better policy* as long as the fluid is coming freely.

The amount to be aspirated varies, but from 1000 to 1500 cc. can be removed with perfect safety at one time if the patient does not become distressed. The patient will have no symptoms if the lung is perfectly expandable. *The aspiration should be stopped:* If the patient complains of tightness or pain in his chest; if he has an uncontrollable desire to cough; if he feels faint or dizzy, and develops pallor or rapid pulse. These signs usually are on the basis of (1) the prior development of a constricting peel and an unduly negative intrathoracic pressure or (2) actual atelectasis of a lobe from obstructing secretions. The latter is not unknown in an ambulatory patient. If atelectasis is suspected the patient should be hospitalized and bronchoscopy considered.

Voluntary air replacement should not be practiced. It serves no useful purpose. There is not the slightest evidence that parenchymal bleeding is increased from thoracentesis. Furthermore, air replacement is harmful in that the prime object is to re-expand the lung as rapidly and completely as possible and this purpose is defeated by using air.

The fluid which is removed should be smelled. Any detectable odor especially if it is musty or foul is pathognomonic of infection. Such infection which is frequently anaerobic, always appears before gross pus can be seen in the fluid. Under such circumstances, the fluid removed should be subjected to gram stain and to culture. Likewise if the blood is extremely dark in color, infection should be suspected.

In the rare case where a pathologic fracture of a rib is suspected, the fluid should be examined for neoplastic cells.

Prognosis and Treatment of Nevi

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TRAUB

All of us have nevi (blemishes or marks) of some type that may be present at birth or that more frequently do not appear until early infancy or even later in life. A simple classification of the more common types of nevi is presented together with a guide to prognosis and treatment. Most treatment measures require the attention of specialists, with the possible exception of the diagnostic excision for biopsy purposes.

VASCULAR NEVI

Vascular nevi as a rule present no diagnostic difficulties but may pose serious treatment problems. As they constitute chiefly cosmetic deformities, this consideration must be paramount in the choice of therapeutic measures.

Nevus vasculosus *(Hyperplasia of blood vessels)—Flat (capillary)*—example: nevus flammeus. This lesion should practically *never* be treated, as the results are invariably poor cosmetically. Tattooing flesh colored tints over the area sometimes provides the best appearance.

Raised—example: angioma, spider nevus. Angiomas may partially or completely disappear spontaneously but frequently leave deep cicatrices, depigmentation or other cosmetic deformities that are hard to correct later. Therefore, administration of early, small, infrequent doses of radium is the procedure of choice because of the good result and freedom of danger from this agent in specialists' hands. Freezing is the next best treatment or the injection of sclerosing materials. The spider nevus may disappear spontaneously. It is best destroyed by electrolysis or an electric needle puncture.

Deep—example: cavernous angioma. These also rarely disappear but the best treatment is radium or the injection of sclerosing materials. Surgical excision may be practiced. Freezing does not destroy the deep vessels.

Nevus lymphangiectodes—These rare lesions are composed of lymph vessels and lymph vesicles. Spontaneous disappearance is not to be expected. Treatment consists of superficial cauterization with either cold or hot cautery. Occasionally they are radiosensitive.

Nevus vasculosus et lymphangiectodes—These lesions, which are more common than the pure nevus lymphangiectodes, are made up of a combination of blood and lymph vessels. Spontaneous disappearance is not to be expected. Treatment is superficial cauterization with either cold or hot cautery or at times radiation.

Mixed vascular nevus—example: combinations of the types mentioned in the same nevus.

THE PIGMENTED, HAIRY AND/OR WARTY NEVI

Differentiation of the lesions in this group frequently presents great diagnostic difficulties that can be solved only by biopsy (by excision), preferably followed by careful study of the sections. Errors in diagnosis, followed by improper treatment, may result in needless deaths from cancer. This is not an uncommon experience in the management of this group of nevi and should be avoided at all costs because of the danger of the malignant melanoma.

Intra-epidermal nevus *(no nevus cells)*—These lesions rarely may terminate as an epithelioma. Most lesions of this group are slightly raised, verrucous and have some pigmentation, and but for the unusual bizarre appearance, might be mistaken at times for unusual or linear warts.

The so-called seborrheic or senile verruca also

falls into this group. Another example is the benign pigmented epithelial nevus, which is entirely flat and smooth but has considerable pigmentation. This nevus may readily be mistaken for the junction nevus or even the nevocarcinoma. The chief clinical points of differentiation are that they never show any sign of appreciable elevation or warty consistency, seldom register decided changes in color, bleed, ulcerate or present the inflammation as seen in a malignant melanoma.

With the exception of the benign pigmented epithelial nevus, all examples of this group are best treated by desiccation or desiccation and curettement. The benign pigmented epithelial nevus should be left alone, but may be excised for diagnostic purposes. Radiation is contraindicated for all examples of this group. Freezing may be done but is not as desirable and requires expert selection and technic.

Typical examples of this group are: (1) nevus verrucosus (hard)—hairs or pigmentation may also be present. A linear configuration is common; (2) benign pigmented epithelial nevus; (3) seborrheic verruca or verruca senilis or keratoma senile—commonly seen on the trunk and face and (4) dermatosis papulosa nigra—found only on the face of Negroes, Filipinos, etc.

Junction (epidermo-dermal) nevus *(nevus cells present)*—This is the only lesion of this group that may terminate as nevocarcinoma (malignant melanoma), which is the most dangerous of all types of cancer. Fortunately this occurs extremely rarely when one considers the great frequency of the lesion. Junction nevi which appear at birth or earliest infancy apparently have a lesser degree of malignancy than those arising suddenly later in life. They grow more slowly, metastasize less rapidly and may be cured by early intervention if a change to nevocarcinoma occurs. Contrasted with this type is the junction nevus that appears later in life and grows more rapidly; when it becomes a nevocarcinoma, it has an extremely bad prognosis as metastasis is early and rapid and a fatal outcome occurs within a few months to one or two years.

Characteristically, the junction nevus may occur anywhere on the body, is usually of small size, smooth, relatively nonwarty and generally is devoid of hairs. Junction nevi, however, do not all run true to form and various exceptions to this description may occur. Because of this and the fact that mixed lesions do occur relatively frequently, it is often difficult to make a clinical diagnosis with certainty; therefore, all doubtful lesions should be removed by excision, both for diagnostic purposes and also because excision either with a scalpel or by the electric cutting current is the treatment of choice. Radiation, freezing and all chemical methods of removal are contraindicated.

Example: nevus pigmentosus—may rarely present a few fine or sparse coarse hairs or have a soft warty surface.

Intradermal nevus *(nevus cells present)*—The intradermic nevus or so-called "common mole" always remains benign if of pure type (not a mixed lesion). The intradermal nevus is found much more commonly on the face than elsewhere on the body, usually from the age of 20 upward. It may easily be destroyed by electrolysis, desiccation or excision. It will not recur if destroyed only to the skin level.

Example: nevus pigmentosus et verrucosus et pilosus—soft warty, not hard, and either flesh colored, pigmented and with or without hairs.

Blue nevus *(nevus cells present)*—The nevus cells are stellate shaped rather than round or oval as in the preceding types. The blue nevus is frequently mistaken for a junction nevus or nevocarcinoma. It is a benign lesion, as only in the rarest instances has it been reported as terminating as melanosarcoma. Characteristically, the color is blue-black, slate-black or brownish-black. It is located deeply in the cutis and the peculiar blue color is reflected through the upper layers of cutis and epidermis. The lesion is best left alone. If it is situated in an area subjected to extreme trauma, or if diagnostic difficulties arise, excision is the procedure of choice. Radiation, freezing or chemical methods of destruction are definitely contraindicated.

Mixed pigmented, hairy or warty nevus—The combination or mixture of two or more of the types discussed occurs with relative frequency. Thus the prognosis of such a lesion depends on the type of nevus present and it is possible to have such lesions terminate as epithelioma, nevocarcinoma (melanoma) or melanosarcoma. As a rule, it is impossible clinically to recognize mixed types and it is only following microscopic examination, which should be practiced in all doubtful lesions, that they may be identified. Nevi may also be associated with epitheliomas that do not actually arise at the expense of the nevus.

NEVI OF SPECIAL TISSUE

Fortunately nevi of special tissues are extremely rare. They are usually recognized and catalogued only after microscopic examination, as most of the lesions appear clinically as small tumors. This is particularly true of this group. The diagnostic excision, which in most instances can be performed so as to remove the entire lesion, is the treatment of choice.

This group of nevi includes (1) glandular (sudoriparous gland nevus, sebaceous nevus); (2) connective tissue nevus; (3) fat tissue nevus (nevus lipomatodes); nerve nevus, and (5) mixed types.

Pediatrics

IN GENERAL PRACTICE

For general practitioners, in whose practice is included a major proportion of the medical management of infants and children, and for the specializing pediatrician as well, POSTGRADUATE MEDICINE *presents this special regular department devoted to brief discussions by recognized authorities on their preferred methods of the treatment and management of diseases and problems of infancy and childhood.*

Management of Epidemic Diarrhea of the Newborn

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PANOS

THE clinical syndrome of "epidemic diarrhea of the newborn" is a highly contagious disease peculiar to nurseries, characteristically insidious in onset, devastating in effect (high morbidity and alarming mortality rates) and difficult to treat. The etiology is obscure, although it seems certain that both bacteria and viruses may be causative, including certain bacteria not ordinarily considered pathogenic. It constitutes a major problem in medical practice, the enormity of which is frequently not fully realized until a serious epidemic is actually in progress and the physician and hospital authorities find themselves frantically and belatedly attempting to organize and enforce control measures. In such circumstances, the result may be the tragic death of several infants.

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Although the purpose of this presentation is to discuss specific factors in the management of an epidemic, it must be emphasized that the disease *can* be prevented and that proper attention to prophylactic measures is therefore of inestimably greater importance. This is illustrated by the experience in Chicago where, under the leadership of Dr. Herman Bundesen, hospital administrators, nurses and physicians joined forces with the Chicago Board of Health to set up a program for the prevention of epidemic diarrhea in nurseries.[1]

As a result, there has not been a single epidemic for over *11 years* in any of the 57 hospitals concerned. A similar program of much broader scope, on a statewide basis, has recently been put into effect by the New York State Department of Health.[2] Such a degree of cooperation and standardization of approach is an ideal not easily realized but represents the only hope for the most practical of all measures, namely, complete prevention (Table 1). For more complete details, the reader is referred to the numerous articles dealing specifically with factors in prevention, etiology and clinical picture.[3-12]

Early diagnosis is of supreme importance and is facilitated by a suspiciousness which should be practically obsessive to be effective. The actual

TABLE 1

COMPLETE PREVENTION OF DIARRHEA OF THE NEWBORN

LEGISLATION *(State, county, municipal)*	HEALTH DEPT. *(Especially municipal)*	HOSPITAL ADMINISTRATORS	NURSING AND MEDICAL PROFESSIONS
Require licensure of all nurseries in accordance with specified minimum standards	Must make regular periodic examinations	Proper space allotment	Constant awareness and vigilance
	Must be empowered to enforce compliance with minimum standards	Proper space arrangements	Special training and technics
	Maintain vigorous educational program for nurses, physicians, public	Equipment	Maintain public relations

definition of diarrhea must take into consideration the variables of character, size and frequency of stools as well as of duration. The passage of one loose green stool should alert the entire nursery staff to the possibility of progression in that infant and spread to others. Any infant having four or more loose, watery or otherwise pathologic stools in 24 hours, with or without weight loss, anorexia or listlessness, should be immediately isolated pending observation and determination of the etiology of the diarrhea.

The exact point at which a presumptive diagnosis of *epidemic* diarrhea should be made and acted upon is arbitrary, but is usually when either *two* or more infants develop an otherwise unexplained diarrhea or *three* or more, preferably the former; it should be specifically defined for each given institution. In the presence of conditions which satisfy the definition, the following steps should be followed routinely and without exception, i.e., without consideration of mitigating or extenuating factors which might delay action:

1. *Report the situation to the department of health immediately.*

2. *Isolate the diarrhea cases in a unit possessing entirely separate personnel and facilities.* Individual isolation and care in cubicles is important. Since all institutions are not able to maintain a separate contagion nursery, there at least should be space available for immediate conversion to this purpose. Furthermore, since only under ideal conditions is it possible to provide sufficient personnel for separate staffs, many hospitals have adopted the practical stratagem of transferring such diarrhea cases to the regular contagion ward (i.e., on the pediatric service) in use for all types of contagious disease, thereby obviating the necessity of providing extra space, personnel and facilities.

3. *Quarantine the nursery* until all contacts have been discharged and the nursery thoroughly cleaned in accordance with board of health regulations. This nursery may then be re-opened to new admissions, providing technics are sedulously observed. In the presence of an epidemic of large proportions, the obstetric unit must also be closed and a new obstetric unit plus an entirely new and independent nursery unit, complete with formula room, be set up in another portion of the hospital, if obstetric cases are to be concurrently accepted.

4. *Set up a "suspect nursery"* with facilities for individual isolation and care to house infants from the quarantined nursery who develop signs and symptoms suggestive of true diarrhea. Those progressing to obvious diarrhea are transferred to isolation, the others discharged as quickly as possible. This nursery will ordinarily be fairly quickly emptied, after which it may be properly cleaned and the space converted to its previous use or, preferably, be maintained as a permanent suspect nursery.

Assignments of attending staff, house staff, nursing and service personnel to each of the nurseries (clean, suspect and contaminated) must be separate; there should be no exchanges or assignments to more than one nursery. Where such a division of labor is not possible as regards the physician, it should at least be imposed on nursing and service personnel.

(Steps 1 to 4 illustrate the need for small nursery units with separate facilities for each. It has been said that hospital architects and administrators can do as much as the combined efforts of the medical and nursing professions to eliminate epidemic diarrhea by specifically providing proper space allocation and arrangements and adequate facilities.)

5. Institute a painstaking search for a source and manner of spread of infection:

   a. Take careful and repeated cultures of:
      (1) Nasopharynx and stools of infants and all personnel, obstetric as well as pediatric;
      (2) Milk-mixture samples and all ingredients;
      (3) "Dip solutions" (for thermometers, instruments, hands or nipples).
   b. Daily "roll call" of personnel to ascertain absence of respiratory tract infection and diarrhea. Serial cultures are advisable. Recent employee transfers should be investigated to be certain no one assigned to the

nurseries has just come from a "dirty" ward or case.

c. Check *every* step in the preparation, sterilization and transport of the milk mixtures and in the technic of feeding. If terminal sterilization is not in use, check especially the method of securing the nipples on the bottles.

d. Check every step in the nursing care (nurse, infant ratio, nursery procedures, transportation of infants, etc.)

6. One physician should be invested with authority to supervise all phases of management and there should be a clearly defined chain of command to facilitate coordination and efficiency.

TREATMENT

There is, of course, no single method of treatment. One medical center may employ a routine bearing minor or major differences from that of another. Also, therapy must vary according to the severity of symptoms, the degree of dehydration and electrolyte imbalance, the results of bacteriologic studies, the response to treatment and the available facilities (in terms of house staff, nursing personnel and physical plant). It is very important that the practitioner develop for himself a specific approach to treatment and apply it consistently in order to become thoroughly familiar with it; otherwise it is too easy to flounder in the morass of pertinent medical literature in an attempt to be "ultra-modern." The routine herein described is in current use at the Children's Hospital of the University of Texas Medical Branch and is closely patterned after that prescribed by Darrow and co-workers.[13-16]

Certain fundamental observations serve as the basis for therapy:

1. Diarrhea in the newborn must be vigorously and skillfully treated; there is absolutely no place for "expectant therapy."

2. Death in this disease is primarily the result of large losses of water and electrolytes (particularly sodium, chloride and potassium) with the attendant medical or "metabolic" shock, acidosis and prerenal azotemia or uremia. Associated and secondary infections play a contributory role.

3. Relapses are frequent and convalescence must therefore be carefully managed and may be quite prolonged.

In actual management, attention is directed to the immediate treatment of shock, early oral starvation, *specific* replenishment and maintenance of water and electrolytes, the treatment and/or prevention of infections and the *gradual* resumption of full feedings. Only the infants with severe diarrhea require the gamut of therapy and since such cases represent the greatest challenge, the remainder of the discussion has particular reference to this group. Three stages in the treatment may be described:

TABLE 2

RAPID ADMINISTRATION TREATMENT OF SHOCK

	Cubic centimeters per kilogram of body weight
Physiologic saline	20-30
Plasma or blood	20-30
MAXIMUM TOTAL	60

Stage one—first 24 hours: treatment of shock, complete replacement of water, sodium and chloride deficits and partial replacement of potassium deficit.

1. ***Shock*** is a conspicuous and alarming sign which must receive immediate attention, frequently as a life-saving measure. The rapidity with which it develops may be startling and its early recognition therefore requires particularly close observation. The urgency of therapy is as great as in shock under other circumstances and may not permit the prior performance of such time-consuming studies as roentgenography and electrocardiography.

Experience has shown that it is wise to treat any severely dehydrated infant for shock even if signs of vascular collapse are not apparent. Because it is usually immediately available, physiologic saline may be administered first in an amount of 20 to 30 cc. per kilogram. This should be followed by an equal amount of plasma (Table 2). Blood samples for electrolyte pattern, culture and type and cross-matching may be drawn just before the intravenous injections.

The substitution of blood for plasma in this early phase of treatment would depend on the speed with which the blood bank can provide matched blood. Since transfusion of blood is advisable at some time during the management of a severe diarrhea, early provision for its availability should in any event be assured. It is important that the rate of injection of these substances be slow (should not exceed 10 cc. per minute for the blood or plasma at first nor more than 5 cc. per minute thereafter) to avoid overloading the circulation—not a rare occurrence. If technical skill permits (it is not difficult to acquire such a skill) the preferred sites of injection are the scalp, wrist, hand and ankle veins. If not, the long saphenous vein near the medial malleolus should be surgically exposed, since there is no virtue in wasting precious minutes going from one vein to the other in the face of such an emergency merely to avoid the necessity of resort to cut-down. During the entire procedure, external warmth, gentle handling and the administration of oxygen are important adjuncts which must not be overlooked.

2. *Oral starvation* during this period should be

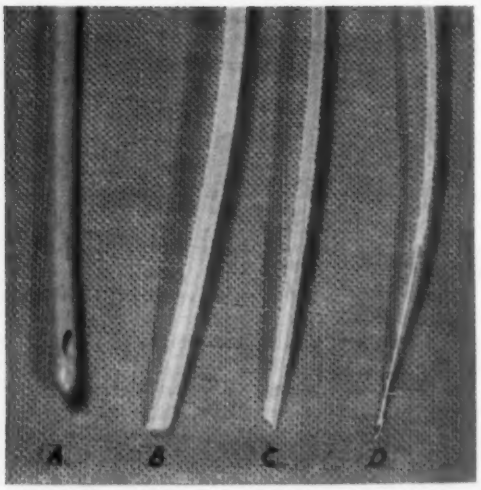

FIGURE 1. Showing comparison between rubber and polyethylene tubing. A. Conventional rubber catheter (F12 gauge) used in gastric feeding. B. Polyethylene tubing used in gastric feeding of children and adults. C. Polyethylene tubing described in text. D. Special tubing for intravenous use.

absolute. The problem of the utility and safety of full oral feedings of diarrhea patients is by no means a settled one. It is true that the proponents of this method emphasize that the use of full oral feedings does not alter the indications for parenteral fluids as traditionally given and cite results which provide certain cogent arguments supporting its value.[17] It would seem, however, that the addition of full oral feedings represents a potential hazard which should not be risked, in the light of present experience, particularly in the age group under discussion.

3. *The restoration of water and electrolyte deficits* is accomplished by the use of a mixture of 5 per cent dextrose in distilled water and Darrow's solution.* The average total volume of fluid required to replace the water losses has been found to be 200 to 225 cc. per kilogram, although as much as 300 to 350 cc. per kilogram may occasionally be necessary. Thirty to 45 cc. per kilogram of this volume is represented by the physiologic saline and the plasma or blood initially employed to overcome shock (saline receiving full credit as fluid, blood or plasma half-credit). Another 80 cc. per kilogram represents the amount of Darrow's solution which will essentially completely replace the sodium and chloride losses (but will only partially replace the potassium deficit). The remainder will thus consist of 5 per cent dextrose in distilled water (Table 3).

*Marketed as KNL® (Darrow's Solution) by Cutter Laboratories, Berkeley 1, California. Contents per 100 cc. distilled water: potassium chloride U.S.P. 0.26 gm.; sodium chloride U.S.P. 0.4 gm.; sodium lactate (anhydrous) 0.59 gm.

TABLE 3

TOTAL FLUID REQUIREMENT IN SEVERE DIARRHEA

		Cubic centimeters per kilogram of body weight
Basic daily requirement		150
Daily deficit	Diarrhea, vomiting Fever Environment 80° F.	50-150
TOTAL		200-300
Usual requirement (first day)		200-225*

*May exceed 300 cc. per kilogram of body weight.

Although it is probably quite safe to set up this mixture as a continuous intravenous drip to follow the plasma or blood, it is wise to allow part (e.g., 100 cc.) of the dextrose solution to drip in before adding the Darrow's solution. This will allow time for the establishment of urinary flow and thus obviate the danger of potassium intoxication. An alternative method is to administer the latter separately by the subcutaneous route for slower absorption. The rate of flow should be carefully observed and should not exceed 12 to 15 drops per minute for the mixture or 8 to 10 drops per minute for the Darrow's solution alone (compute the total time required for an infusion to be taken on the basis of 15 drops to the cubic centimeter).

4. *Prophylactic penicillin* should be given routinely to prevent secondary infection. A dose of 100,000 units of the crystalline procaine form given once daily is more than adequate. Penicillin should be supplemented or replaced as indicated by the isolation of a causative organism from the stool or by a specific diagnosis of associated infection which is present.

5. *Parenteral vitamins,* especially C and K and probably also B complex should be administered.

6. *Gentle, minimal handling,* external warmth and oxygen are important measures to be kept in mind (Table 4).

TABLE 4

STAGE ONE—FIRST 24 HOURS

	Cubic centimeters per kilogram of body weight	
Physiologic saline	20-30	*rapidly*
Plasma or blood	20-30	*rapidly*
Darrow's solution	80	
Dextrose, 5 per cent in d/w	80-90	
TOTAL	200-230	
Absolute oral starvation		
Prophylactic penicillin		
Parenteral vitamins K and C		

FIGURE 2. Showing the polyethylene tubing in place and the means of administering small feedings at frequent intervals.

Stage two—end of first day to end of third or fourth day.

1. Fluid requirement diminishes because of the reduced number and amount of stools but is never considered to be less than 150 cc. per kilogram per day. Here again, experience has shown that the electrolyte needs, including the potassium supplementation for gradual reconstitution of intracellular stores, can be supplied by 50 cc. per kilogram per day of Darrow's solution. The remaining 100 cc. per kilogram should consist of 5 per cent dextrose in distilled water (thus one-third Darrow's and two-thirds dextrose solutions; see Table 5). This mixture may be offered by bottle every two or three hours.

TABLE 5

STAGE TWO—SECOND, THIRD AND FOURTH DAYS

	Cubic centimeters per kilogram of body weight	
Fluid requirement (minimum per day)	150	
Darrow's solution (per day)	50	*orally by bottle or tube every 2-3 hours*
Dextrose, 5 per cent in d/w	100	
No milk mixture		
Blood or plasma (per day)	20	*(as indicated)*

Since infants under the circumstances frequently either completely refuse the bottle or are unable to take enough to supply the total requirement, the mixture must then be administered by gavage or hypodermoclysis. The use of polyethylene tubings* for the former purpose has received extensive trial (in several hundred patients) at the Children's Hospital of the University of Texas Medical Branch and has proved to be extremely practical and satisfactory (Figures 1 and 2). The elastic composition of such tubing permits a relatively much larger lumen diameter as compared to over-all diameter, thus providing an enormous advantage over the conventional rubber tubing in that a much smaller tube may be effectively substituted. It is very well tolerated over a long period of time, but should be re-inserted through alternate nostrils every third or fourth day. The complications of otitis media and tissue irritation and necrosis are rare. Continuous drip feedings or intermittent small feedings at frequent intervals may be given by this means. The tubing should be stoppered when not in use.

It may be added that this method of administering fluids has been found to be equally useful in managing older infants and children in whom anorexia prevents the voluntary ingestion of adequate amounts of fluid but who tolerate tube feedings very satisfactorily. Finally, in those instances where it is preferred to administer fairly large amounts of fluid over a period of days by hypodermoclysis, the addition of hyaluronidase to

*Polyethylene Catheters (Surprenant) obtained from Clay-Adams Company, Inc., New York. Size used for infants has an inner diameter of 0.43 inches, and an outer diameter of 0.60 inches (PE 150).

the solution has been found to be a safe and dependable means of facilitating and expediting absorption.[18-21]

2. It is usually advisable to give a daily transfusion of either blood or plasma during this period.

Stage three—gradual resumption of full milk feedings by the end of the eighth to fourteenth day.

Following the complete disappearance of diarrheal stools for at least 24 hours, a dilute milk mixture should be tried. This mixture is composed of skimmed or half-skimmed milk powder (such as ALACTA®) and water and should contain approximately 10 per cent carbohydrate (KARO,® DEXTRIMALTOSE,® etc.). The beginning concentration should be such as to provide 20 calories per kilogram per day. If this is well tolerated, the concentration may be increased by 10 to 20 calories per kilogram per day. Potassium chloride, 1 to 2 gm., must be added to the mixture daily until 70 to 80 calories per kilogram per day are being provided, after which point it may be discontinued since the milk itself will furnish sufficient potassium.

Progression beyond 90 to 100 calories per kilogram per day and the increase in fat content by transfer to whole cow's or evaporated milk should be undertaken gradually and cautiously. The tendency for relapse has already been emphasized. The complication of hypocalcemic tetany during the recovery period is, in the author's experience, quite rare, but should constantly be kept in mind.

There is little to be expected and much to fear from the use of such endocrine preparations as desoxycorticosterone acetate, adrenocorticotropic hormone or cortisone in the management of diarrhea. The same may be said of paregoric and other constipating medications. It must be re-emphasized that recovery depends on the *specific* replacement of water and electrolyte (sodium, chloride and potassium) loss and the prevention of further losses by means of initial starvation and the very gradual return to full oral feedings.

TABLE 6

STAGE THREE—UP TO EIGHTH TO FOURTEENTH DAYS

	Cubic centimeters per kilogram of body weight per day	
Fluid requirement	150	
Milk mixture	20	
Boiled skimmed milk Water Carbohydrate, 10 per cent 1 (or 2) gm. KCl		Beginning concentration should be 20 cal./kg./day

Increase caloric content of milk mixture by 10 to 20 calories per kilogram per day up to 70 calories, then discontinue KCl. Gradually increase calories to 120 kilograms per day by use of half skimmed, then whole milk.

SUMMARY

1. Complete prevention of the syndrome "epidemic diarrhea of the newborn" is possible, but requires the cooperative efforts of legislative bodies, health departments, hospital administrators and the nursing and medical professions.

2. The exact point at which a presumptive diagnosis of epidemic diarrhea should be made must be rigidly defined. In the presence of circumstances satisfying the criteria for this definition, certain previously specified and routine measures should be immediately taken, without exceptions. These measures are described.

3. The specific treatment of a severe case of diarrhea is briefly outlined.

4. The uses and advantages of polyethylene tubing for gastric feeding are emphasized.

REFERENCES

1. BUNDESEN, H. N.: Control of epidemic diarrhea. Mod. Hosp. 72:43-48, 66-70, 1949.
2. TRUSSELL, R. E.: Diarrhea of the newborn. New York State J. Med. 49:2789, 1949.
3. CLIFFORD, S. H.: Medical progress; care of the newborn. New Eng. J. Med. 240:61, 1949.
4. CLIFFORD, S. H.: Infections of the newborn and premature infant. Pennsylvania M. J. 53:25, 1950.
5. WEYMULLER, C. A., BECK, A. C. and ITTNER, E. J.: Measures for the protection of newborn infants. M.A.M.S. 133:78, 1947.
6. RUBINSTEIN, A. D. and FOLEY, G. F.: Epidemic diarrhea of the newborn in Massachusetts. New Eng. J. Med. 236:87, 1947.
7. GRULEE, C. G.: Standards and Recommendations for Hospital Care of Newborn Infants. The American Academy of Pediatrics Committee on Fetus and Newborn, Evanston, Illinois.
8. NELSON, W. E.: Textbook of Pediatrics. Ed. 5. 1950, W. B. Saunders Company, Philadelphia, p. 339-341.
9. ABRAMSON, H.: Acute diarrheal disorders of newborn infants. Am. J. Dis. Child. 79:698, 1950.
10. CLIFFORD, S. H.: Diarrhea of the newborn. New Eng. J. Med. 237:969, 1947.
11. VIGNEC, A. J., MURPHY, T. F., VIDAL, I. E. and JULIA, J. F.: Epidemic diarrhea of the newborn during and after the neonatal period. Am. J. Dis. Child. 79:1008, 1950.
12. FRANT, S. and ABRAMSON, H.: Epidemic diarrhea of the newborn, in Brenneman's Practice of Pediatrics, edited by I. McQuarrie. 1949, W. F. Prior Company, Inc., Hagerstown, Md. Vol. 1, Chap. 28, p. 19-37.
13. GOVAN, C. D., JR. and DARROW, D. C.: The use of potassium chloride in the treatment of the dehydration of diarrhea in infants. J. Pediat. 28:541, 1946.
14. DARROW, D. C.: Diarrheal diseases of infancy, in Brenneman's Practice of Pediatrics, edited by I. McQuarrie. 1949, W. F. Prior Company, Inc., Hagerstown, Md. Vol. 1, Chap. 28, p. 11-17.
15. DARROW, D. C., PRATT, E. L., FLETT, J., JR., GAMBLE, A. H. and WEISS, H. F.: Disturbances of water and electrolytes in infantile diarrhea. Pediatrics 3:129, 1949.
16. FLETT, J., JR., PRATT, E. L. and DARROW, D. C.: Methods used in treatment of diarrhea with potassium and sodium salts. Pediatrics 4:605, 1949.
17. CHUNG, A. W. and VISCOROSA, B.: The effect of early oral feeding versus early oral starvation on the course of infantile diarrhea. J. Pediat. 33:14, 1948.
18. BURKET, L. CLAIR and GYORGY, P.: Clinical observations on the use of hyaluronidase. Pediatrics 3:56, 1949.
19. JAWORSKI, A. A. and FARLEY, J. E., JR.: Hyaluronidase in administration of fluids. J. Pediat. 79:59, 1950.
20. SCHWARTZMAN, J. and LEVBARG, M.: Hyaluronidase. J. Pediat. 36:79, 1950.
21. SCHWARTZMAN, J.: Hyaluronidase in Pediatrics. New York State J. Med. 51:215, 1951.

Recent Advances in Treatment of Common Contagious Diseases

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How much has the introduction of the antibiotics changed our treatment of the common contagious diseases? This is a question that is asked so frequently that it is valuable to review this problem at this time and to mention the other therapeutic agents which are also of value.

LAWSON

CONTAGIOUS DISEASES FOR WHICH ANTIBIOTIC THERAPY IS VALUABLE

Scarlet fever and "Strep" throat—Although there is no need for the artificial separation of scarlet fever from those other cases of streptococcal sore throat without a rash insofar as epidemiology and complications are concerned, it is of value to make a distinction regarding therapy. This is because the therapy of scarlet fever requires a consideration of the antitoxic as well as antibacterial agents. Before we had good antibacterial agents our only agent was convalescent serum or streptococcal antitoxin which did reduce the duration of the rash and other signs of "toxicity" but did nothing to cut down either the septic or the late "antigenic" complications. Now the "toxic" component of scarlet fever is so mild that these agents are rarely indicated. On the other hand it is now well shown that early and continued antibiotic therapy not only will definitely decrease the incidence of septic complications such as otitis media and cervical adenitis, but also probably will cut down the incidence of the later complications of rheumatic fever and nephritis.[1,2]

The recommended drug is penicillin which can be given subcutaneously in a daily injection of slowly absorbed material, or orally. Various schedules have been advised but our preference is an immediate injection of 300,000 units of procaine penicillin followed by 150,000 units orally every eight hours for 7 to 10 days. Sulfadiazine has been used but results with this drug have not been as satisfactory.

Whooping cough—Most of the published work on the treatment of whooping cough indicates that there is a definite decrease of morbidity and mortality when either aureomycin or chloramphenicol is given.[3,4] There is some argument, however, whether the improvement is due to the specific action of the drug on the pertussis organism or to its effect on the secondary invaders. Regardless of the mechanism, the improved results justify the use of either of these drugs. The drugs can be given orally in doses of 50 to 100 mg. per kilogram of body weight per day. When vomiting is troublesome, chloramphenicol can be given by rectum although the absorption is rather variable.

For severely ill infants, especially those under one year of age, the intramuscular use of hyperimmune human serum or anti-hemophilus pertussis rabbit serum is often of decided benefit.

CONTAGIOUS DISEASES FOR WHICH ANTIBIOTIC THERAPY IS INDICATED TO PREVENT SECONDARY INFECTION

Diphtheria—There is no evidence that the diphtheria organism is affected *in vivo*. However, because of the common finding of hemolytic streptococci in association with clinical diphtheria, the routine use of penicillin is advised in addition to diphtheria antitoxin (20,000 to 60,000 units). Tracheotomy would make the use of antibiotic prophylaxis even more imperative.

Measles—Antibiotics do not affect the course of measles. However, if measles is severe or occurs during periods of high respiratory disease incidence, prophylactic therapy is indicated to reduce the incidence of otitis media and pneumonia. Aureomycin, chloramphenicol or terramycin in doses of 25 to 50 mg. per kilogram of body weight per day is satisfactory.

Whenever the exposure is known, one should try to modify measles by gamma globulin injection.

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CONTAGIOUS DISEASES FOR WHICH ANTIBIOTICS ARE NOT INDICATED

German measles—Except for the problem of German measles in the first trimester of pregnancy causing damage to the fetus, one rarely sees complications in this disease. The antibiotics have no effect on this virus.

Chickenpox—There is no value in the use of antibiotics here since the virus of chickenpox is not affected.[5] However, it might be desirable to use bacitracin ointment on any infected skin lesions.

Mumps—The evidence that mumps is favorably influenced by antibiotic therapy is based on completely uncontrolled observations in this extraordinarily variable disease. The bulk of the evidence indicates no effect. Studies on the prevention and treatment of orchitis with stilbestrol have been conflicting, but controlled studies have shown that this drug has little value.[6] Gamma globulin from serum of convalescent patients would appear to be of value in the prevention of orchitis, but this is not readily available.

There is some evidence that gamma globulin from pooled serum may provide passive immunity against mumps and, therefore, may be used to protect exposed susceptibles. It is not desirable to prevent mumps in male children, since this would leave them susceptible to mumps and orchitis later in life. However, the recent introduction of mumps vaccine may be of distinct advantage for temporary protection of susceptible adults such as troops. A skin test is available to determine previous contact and, therefore, presumable immunity to mumps virus.

In summary we can see that there has not been a great change resulting from the introduction of antibiotics in the treatment of common contagious diseases with the exception of streptococcal disease. Although almost all the virus diseases are not affected specifically by the new drugs, there has been some beneficial effect through the reduction in secondary infections with susceptible bacteria. However, in order to avoid disappointment, it is still necessary to appreciate the limitations as well as the benefits of antibiotic therapy.

REFERENCES

1. Denny, F. W., Wannamaker, L. W., Brink, W. R., Rammelkamp, C. H. and Custer, E. A.: Prevention of rheumatic fever. J.A.M.A. 143:151 (May 13) 1950.
2. Weinstein, L. and Perrin, T. S.: The treatment of scarlet fever with penicillin G administered orally three times a day. J. Pediat. 37:844 (December) 1950.
3. Payne, E. H., Levy, M., Zamore, G. M., Vilarroir, M. S. and Canelas, E. Z.: Pertussis treated with chloramphenicol. J.A.M.A. 141:1298 (December 31) 1949.
4. Chang, S. M., Wells, E. B., Place, E. H. and Finland, M.: Aureomycin treatment of pertussis. J. Pediat. 36:443 (April) 1950.
5. Mazursky, M. M., Wright, L. and Weichsel, M.: Clinical observations on the use of aureomycin in varicella. J. Pediat. 5:276 (February) 1950.
6. Norton, R. J.: Use of diethystilbestrol in orchitis due to mumps. J.A.M.A. 143:172 (May 13) 1950.

COMING MEETINGS AND POSTGRADUATE COURSES

International College of Surgeons

Sixteenth annual assembly of the United States Chapter of the International College of Surgeons, Chicago, September 10-13, with headquarters at the Palmer House. In addition to prominent surgeons from the U. S. and other countries, speakers will include Mr. Lawrence Abel, F.R.C.S., of London, and Senator Estes Kefauver. Hotel reservations may be arranged by writing to the Housing Division, Chicago Convention Bureau, 33 North LaSalle Street, Chicago 2, Illinois

University of Minnesota Medical School, Minneapolis

Continuation course in roentgenology of chest diseases, at the Center for Continuation Study, October 29 to November 3. Visiting lecturers include Dr. W. Edward Chamberlain, Philadelphia; Dr. Benjamin Folson, Cincinnati; Dr. L. Henry Garland, San Francisco; Dr. George R. Krause, Cleveland, and Dr. Averill A. Liebow, New Haven. Chairman will be Dr. Leo G. Rigler, Professor and Head of the Department of Radiology, University of Minnesota

Army's Graduate Professional Education Program

Courses in oral surgery for Army medical and dental officers: (1) Letterman Army Hospital, San Francisco, September 24-28; attendance limited to personnel from the 4th, 5th and 6th Army areas only. (2) Walter Reed Army Hospital, Army Medical Center, Washington, D. C., November 5-9; attendance limited to personnel from 1st, 2nd and 3rd Army areas and Military District of Washington.

Nineteen courses in 10 medical and dental specialty fields will be given at five Army Hospitals, the Armed Forces Institute of Pathology, and the Medical Service Graduate School, Army Medical Center, Washington, D. C., during the last six months of this year. Other courses will be given in the second half of the fiscal year 1952, beginning next January. Naval and Air Force medical officers have been invited to attend.

Further information can be obtained from the Department of the Army, Office of the Surgeon General, Technical Information Service, Washington 25, D. C.

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EDITORIALS

AUGUST 1951

COURTS RULE REBATES PAID TO OCULISTS ARE AGAINST PUBLIC POLICY AND CANNOT BE DEDUCTED AS BUSINESS EXPENSES

One of the most important decisions made by the United States Court of Appeals in recent years was handed down on April 2, 1951, in a review of a decision made by a tax court. The case concerned an appeal from a decision of the Tax Court of the United States which sustained the Commissioner of Internal Revenue in disallowing certain trade discounts claimed by the City Optical Company of Wilmington, North Carolina, to various oculists and also paid by the Duke Optical Company to oculists in that area. The facts were not disputed.

The optical companies which grind and fit the eyeglasses and spectacles had entered into oral agreements with various oculists in the area concerned whereby they agreed to pay the oculist one third of the retail price of all eyeglasses and spectacles purchased by patients who were sent to them. The evidence indicated that neither the oculists nor the opticians informed the patients of the rebate arrangement. The disclosure was made only when specifically requested by individual patients. The manufacturers of the spectacles and eyeglasses naturally wished to deduct the rebates as a necessary part of conducting their business in calculating their income taxes.

In previous decisions the courts had ruled that a deduction should not be allowed as ordinary and necessary when the practice sharply violated public policy. The defendants in various cases had argued that decisions by the courts in such matters involved judicial legislation. Associate Justice Black previously said, however, that the courts must narrow the generally accepted meaning of language used in legislation so that the consequences of tax deductions would not frustrate sharply defined national or state policies which proscribed particular types of conduct. Thus Stryker in his book, "Courts and Doctors," pointed out that "the relationship of patient and physician is to the highest possible degree a fiduciary one, involving every element of trust and confidence."

In making the decision the Appeals Court quoted also the words of Justice Cardozo who said, "Many forms of conduct permissible in a workaday world for those acting at arm's length, are forbidden to those bound by fiduciary ties. A trustee is held to something stricter than the morals of the market place. Not honesty alone, but the punctilio of an honor the most sensitive, is

then the standard of behavior. As to this there has developed a tradition that is unbending and inveterate."

In continuing their decision, the Appeals Court said, "We certainly will not lend the force of any opinion of this court to sanction, as an 'ordinary and necessary' expense of the optician's business, the making and carrying out of such unconscionable and reprehensible contracts for secret kickbacks to a doctor.

"A doctor owes the duty of undivided loyalty to his patients, and a contract which violates this duty is unenforceable and opposed to public policy. One cannot at the same time serve two incompatible masters."

Continuing, the Court said, "The evil we find in these kickbacks is the receipt by the physician in secret profits through dealings with his patients. Surely, the doctor is assuming an utterly inconsistent position when he recommends an optician without disclosing that he is being paid for the recommendation. This corrupt practice obviously involves, or tends to promote, very serious evils: (1) prescription by the doctor of glasses where not actually necessary; (2) more expensive lenses than really needed; (3) recommendation of an inferior optician; (4) artificial increase in the cost of glasses by the inclusion of the physician's commission, for which the physician affords no value to the patient. The bait of the secret consideration, which taxpayers offered to the doctor, hopelessly divides the trust interest of the doctor."

The Court pointed out that the states of California and Washington have thought this practice so insidious as to pass legislation forbidding it. The Courts quoted the Principles of Medical Ethics of the American Medical Association: "It is unprofessional to accept rebates on prescriptions or appliances, or perquisites from attendants who aid in the care of patients." Moreover, the Medical Society of North Carolina has specifically condemned kickbacks.

In ending its decision the Court said, "We are not impressed by the argument of counsel for taxpayers that this custom of secret kickbacks from opticians to doctors is so common and so widespread that such payment must be deductible because the Commissioner of Internal Revenue has issued no regulation specifying that such payments are not deductible. No decision precisely in point has been cited to us. Nor does the record disclose either that the Commissioner had been definitely apprised of this practice or that he had ever made any ruling on it. Certainly if other opticians, as did taxpayers here, camouflaged these payments as 'trade discounts,' there was little to put the Commissioner on notice that the deductions claimed were the secret kickbacks from optician to doctor."

Thus a high court has definitely ruled that kickbacks represent the type of expense that cannot be deducted in estimating income tax. While the present decision refers only to the arrangements between those prescribing eyeglasses and those manufacturing such eyeglasses, the decision obviously can be made to apply equally to the makers of all other types of appliances and quite certainly also to any arrangements that might be made for fee-splitting in any manner or form. The decision of the Courts means that the practice of fee-splitting is recognized legally as dishonest. Money spent to secure business in this way cannot be considered an ordinary or necessary expense of conducting business. Medical leaders have always condemned the practice; now the Courts arm them with an effective weapon against it.

MORRIS FISHBEIN

THE DOCTOR'S INDEPENDENCE

In May the British Parliament took final action on modifications of the National Health Act which are fundamental in bringing about recognition of certain principles. What was aimed to supply a complete medical service, including drugs, spectacle lenses and frames, hearing devices, wigs, brassieres, trips to the seaside and residence in sanatoriums in Switzerland, has begun to be modified by requiring payments in rela-

tionship to some of these services, completely eliminating others and trying to meet the old-fashioned standard of having enough money to pay your bill.

In the meantime, British physicians are beginning to wonder exactly what the National Health Act has done to the fundamental freedom of the medical profession. Dr. T. F. Fox, in a Croonian lecture to the Royal College of Physicians, pointed out that the National Health Service Act had greatly enlarged the doctor's freedom because he was no longer dependent on his income directly from patients and that in this manner commercialism had been eliminated from medical practice. However, Dr. Fox recognized that payment of the profession from public funds could pave the way to control of the physician by the administrators through the purse.

The fundamental duty of the doctor is to his patient. The medical authorities in Great Britain, having a claim to being legally in charge of the medical profession, have begun to interfere with professional freedom and initiative and, if this expands, obviously some different system of payment will have to be devised. Dr. Fox has suggested that there would be advantages if the sums allocated for remuneration of doctors in the National Health Service could be paid to a professional body like the new British Medical Guild, evolved by the British Medical Association, and that this guild would have the responsibility for distribution of the funds received to its members by salaries or otherwise as it saw fit.

In his statement Dr. Fox apparently fails to recognize that medical politicians in charge of the distribution of funds to the professional membership might be just as much subject to the criticism of political manipulation as would nonmedical administrators. The British Medical Guild has a mechanism whereby general practitioners may, if they wish, discontinue work for the National Health Service, pending adjudication of disputes. Dr. Fox feels that any threat to such action, which incidentally has been proposed from time to time by various groups in the United States, would be contrary to the fundamental ethics of the medical profession and that some more civilized sanction, as perhaps appeal to the public by publicity, would achieve the same object without damaging the medical profession.

MORRIS FISHBEIN

PROGRESS TOWARD A WORLD INDEX OF MEDICAL LITERATURE

For some time several groups of interested physicians, teachers and research workers have been endeavoring to develop an adequate index for the medical literature of the world including both that of the basic medical sciences and of clinical medicine. *Biological Abstracts* does an excellent job in indexing the literature of the basic medical sciences but unfortunately the material appears quite late and is not accessible to the vast majority of men in the field of medical practice. The *Quarterly Cumulative Index Medicus* has been appearing irregularly; however, even by using a new technic it still appears late and is neither quarterly nor cumulative.

The *Current Medical List* recently undertaken by the Army Medical Library seems to be the most comprehensive index to medical literature. It appears monthly and is gradually expanding its scope. The *Current Medical List* does the indexing according to a different plan, including the listing of periodicals with titles, authors and a separate subject index which appears with each number. Obviously cumulation has not yet become a problem. *Excerpta Medica,* published in English in Holland, now is issued in 15 sections and will no doubt soon add another dealing with cancer. The 15 sections run the entire gamut of medical interest, including basic medical sciences, research and applied medical knowledge. The numbers appear monthly and most of the material is quite up-to-date. Unfortunately the indexes are somewhat behind the publication of the ma-

terial and every possible effort is being made to bring these indexes more nearly up-to-date.

The ideal now being sought would be a monthly index to the world medical literature which includes something over 3000 titles of periodicals, the index to be printed in a single alphabet with subjects and authors, the original reference to be in the original language with probably an English translation and with the adequate bibliographic reference. Moreover, plenty of cross-references would insure the finding of appropriate material by those who utilize the book. The monthly index could be cumulated either semi-annually or annually. Many recent conferences have indicated that considerable waste would ensue from attempting to index every article in every one of the 3000 to 4000 medical periodicals that are now available but a good index would always be somewhat selective. If in addition to the indexing of original articles in such publications there could be at the same time a reference to abstracts in *Excerpta Medica,* most of the medical literature of the world would become available through individual subscriptions and library subscriptions to far more physicians than now have easy access to such a service.

The type of index that should be made available requires cooperation on the part of the American Medical Association, the Army Medical Library and the board of *Excerpta Medica.* All of these ventures are conducted not for profit and in the interest of the advancement of medical science. Surely no reason seems to exist why complete cooperation should not be attempted.

At present Denmark publishes an annual index to all of the scientific medical contributions made in Denmark. Similar publications have apparently been attempted in the past in Poland, in Russia, in Japan and in some of the South American countries. Since English is becoming more and more the universal medical language, the objective previously mentioned would seem to go further toward meeting the world need than any other proposal that has thus far been made. Certainly the project is of sufficient importance to command the interest of every enlightened physician.

MORRIS FISHBEIN

CURRENT COMMENT

NATIONAL FUND FOR MEDICAL EDUCATION

With the sponsorship of industry, organized labor, agriculture, a group of university presidents, and 12 scientific and educational foundations and with support also by the medical profession, a new philanthropic organization was launched in May to aid the medical schools of the United States. The board of trustees contains some of the most important names in American industry and education with a sprinkling of physicians among whom the most prominent are Dr. Donald C. Balfour, Dr. Frank H. Lahey, Dr. Seelye G. Mudd and Dr. Allen O. Whipple. The advisory council is constituted largely of the presidents of 14 leading universities with Drs. Donald G. Anderson, Victor Johnson, H. G. Weiskotten, Arthur C. Bachmeyer, Walter Bloedorn and Joseph C. Hinsey. Obviously the university presidents are being aided by leading representatives of the Council on Medical Education and Hospitals of the American Medical Association and of the Association of American Medical Colleges.

The fund proposes to produce about $5,000,000 annually for distribution to the medical schools. The leaders recognize that this sum will not completely solve the distressing financial problems of medical education but is a voluntary effort to make at least a prompt beginning in that direction. Since all the administrative funds have been underwritten by the 12 leading foundations, all of the money raised will go directly to the medical colleges.

The steps taken are of the greatest possible significance and there seems to be no reason why anything but complete success should be anticipated. In the meantime, surveys will indicate the total needs of the medical colleges and further whether or not ultimate aid by the government will be necessary to maintain the high standards of medical education which now prevail in the United States.

MORRIS FISHBEIN

Men of Medicine

"Tailor-made for his job"

Ruddy, white-haired Dr. Burgess Lee Gordon, who becomes the first full-time president of Philadelphia's century-old Woman's Medical College of Pennsylvania September 1, is one of the medical profession's rare triple-threat men.

He's a physician (director of the department for diseases of the chest at Jefferson Hospital in Philadelphia), a teacher (clinical professor of medicine at Jefferson Medical College) and administrator (of a $575,000 United Mine Workers fund for study and treatment of silicosis).

What's more, he's an author (148 publications and co-editor of the monumental "Oxford Medicine," continually revised authority on internal medicine), a scientific farmer (years ago in his native Spokane, Washington) and inventor (Gordon stethoscope and electric thermometer).

And what is still more, he's a man who now at 59 rises with the same happy confidence to a challenge as when he was "Red" Gordon, a Jefferson College medical student with flaming red hair, and clung to a pitching ambulance on emergency call into a Philadelphia slum.

Dr. Gordon, whose brown eyes behind rimless glasses are bright as wet pebbles and whose smile is big and warm and at home in a strikingly young face, is the kind of man who happens to people, his friends say. He's an influence, an environmental enthusiasm.

In a varied medical career, usually in collaboration with other doctors, he demonstrated that the heart, contrary to popular belief, does not dilate under exertion; he trimmed two pounds a week off the obese while letting them eat abundantly; he helped to put a Negro hospital back on its financial feet; he developed a treatment for silicosis which has eased the pain and discomfort of hundreds of coal miners.

This is a man, who, with one full, rich medical career tallied, stands eagerly on the threshold of another.

"He is tailor-made for our needs," says Donald C. Rubel, chairman of the Board of Corporators of Woman's Medical College, the first institution in the world for educating women in medicine and now the only one in the western hemisphere.

The tailoring, prenatally, of Dr. Gordon started in Scotland, where his father's folks came from, and England, from which his mother's forebears sailed to America before the Revolution. There were early influences conspiring to determine him upon the medical profession.

Among his mother's relatives, there were at least two doctors, one a Dr. Simpson of St. Louis, her uncle, who developed Simpson's forceps still used in childbirth, and the other, a Dr. Semmes, a surgeon in the Confederate Army during the Civil War.

Mrs. Gordon, now a widow living with one of Dr. Gordon's two brothers in San Francisco, had her heart set on medicine for her oldest son, apparently even before he was born.

She was from Trinidad, Colorado. And Dr. Gordon's father, also Burgess Lee, was from Frankfort, Missouri. He was of pioneering material and she did not hang back. Shortly after fire wiped out Spokane, they journeyed to that Washington city, made it their home, helped to rebuild it.

The father set himself up as a wholesale grocer, supplied the gold, lead, zinc and copper mining district across the line in Idaho, around Wallace, Mullen, Kellogg and Burke. Dr. Gordon, who was born in 1892, not long after his parents settled in Spokane, remembers as a boy he heard his father talk about shipping sugar in carload lots from California.

There was a bustling eastern atmosphere about Spokane in those days, principally because so many from Pennsylvania, New York and New England attracted by the mines and timber had settled there. As the years passed, many good doctors set up practice there and good hospitals were built.

When Dr. Gordon was only seven, his mother brought him east for a trip, starting a process early of broadening his outlook. In 1909, when he was 17, he came east for the fourth time with his mother, visited Washington, Baltimore and Philadelphia. One of his younger two brothers, Ralph, was along.

The following year, his father, who imported foodstuffs from the Orient, took Dr. Gordon, his mother and brother, Ralph, to Japan where for more than three months they toured the islands, living with Japanese families. The 18 year old Burgess Gordon with his fiery red hair—the Japanese had never seen his like before—was an object of wonder and awe. The natives, encouraged by mischievous Ralph, sought to feed him choice morsels on the street as they did a deer-like animal considered sacred.

Shortly after moving to Spokane and when land was cheap, Dr. Gordon's father bought 10,000 acres, among them a 175-acre farm between the Big and Little Spokane Rivers.

On it was the oldest house in the State of Washington, a Hudson Bay Company trading post, in which young Gordon played as a boy and which has been preserved by the family as a historic shrine. The Indians call it Singumànish, or Little Spokane House.

Finished with high school, Dr. Gordon went to Gonzaga University in Spokane, among whose best known alumni is Bing Crosby, an acquaintance of the Gordon boys. Although slight in build—he was only 114 pounds when he was at Jefferson College studying medicine—Dr. Gordon played baseball and basketball at Gonzaga. He also played the violin in trios and quartets.

Graduating from Gonzaga in 1912, Dr. Gordon came east to Harvard University where he studied government and economics as a special student. And then fate dealt him a backhander. He was felled by pneumonia, which left him so weakened he went home in 1913, home to Singumanish in search of his health.

He took courses at Washington State College in Pullman, courses dealing with the chemistry of the soil, with cultivation of trees, with animal husbandry. He worked the soil of the Singumanish farm, enriched it, discovered that chemistry and growing things were forever nudging him toward closely allied medicine. His mother urged him. Half a dozen friends of the family were doctors, several of them graduates of Jefferson Medical College.

His health restored, Burgess Gordon entered Jefferson Medical College in 1915. With him came Alphonso L. Codd, a boyhood friend in Spokane, who, slight of build and red of hair, was almost a double for young Gordon.

He and Codd, the latter now dead, shared assignments, rode the ambulance and waited often all night, wrapped in blankets and sleeping, to deliver a baby in a poor Philadelphia home. The two red tops confused many who thought they were seeing double. But they didn't look enough alike to spell each other in classes. They found that out.

In his student days, and for years thereafter, Dr. Gordon came under the influence, albeit second-hand, of Sir William Osler, perhaps the world's outstanding internist. The late Dr. Thomas McCrae, professor of medicine at Jefferson, to whom Dr. Gordon looked most for guidance, was a student of Sir William at Johns Hopkins. They were both Canadians and had grown up together.

Graduated a medical doctor in 1919 and almost finished with his internship at Jefferson in 1921, Dr. Gordon took another punishing blow from fate. This time it was influenza meningitis. It was back to Spokane again, this time for six months. And then Dr. Gordon came out fighting and eager again.

THROUGH Dr. McCrae, he obtained an assistant residency at Peter Bent Brigham Hospital in Boston. There he was influenced by another of Osler's students, Dr. Henry A. Christian, chief of medical service at the hospital and professor of medicine at the Harvard Medical School.

Dr. Christian is editor of the scholarly "Oxford Medicine," a shelf-full of loose-leaf volumes kept up to date with the help of Dr. Gordon and two other co-editors, Dr. William J. Kerr, professor of medicine at the University of California Medical School, and Dr. Cyrus C. Sturgis, professor of medicine at the University of Michigan Medical School.

That's now. Back in 1922, Dr. Christian offered the post of resident physician at the Brigham Hospital to Dr. Gordon and he remained until 1926. At the same time he was a teaching fellow at Harvard Medical School.

During this period, Dr. Gordon became interested in the effects of exertion, such as running, on the heart.

BURGESS LEE GORDON

With Dr. G. F. Strong of Vancouver, B. C., he published his first paper in 1923, in the *Archives of Internal Medicine*. It was entitled "Studies on the rabbit's heart."

With Dr. Samuel A. Levine, a Boston heart specialist, he studied the Boston Marathon runners, x-rayed their hearts before the run, immediately after and then 90 minutes later.

The pictures of hearts taken at the finish line showed they were contracted rather than expanded. The pictures taken later showed they had returned to normal size.

The findings were echoed later when Dr. Gordon conducted a close study on the scores of runners who were in the 1929 cross-continent Bunion Derby. Incidentally, there wasn't a bunion in the lot, Dr. Gordon said.

His studies of runners, their habits and internal chemistry, led him to the conclusion that collapse was not due to any failure of the heart but to lack of blood sugars which were burned up by continuing, strenuous effort. To offset their weakness he fed runners carbohydrates, usually sugar, in divided amounts, stoking them up—but not loading them up—as they needed it.

These studies also served as the basis for his work with obese persons some years later. Under his direction, persons weighing 250 pounds and more shed two pounds a week. Instead of eating a lot of sweets at one sitting and building up fat, they took small amounts frequently, just enough to replenish what was consumed.

In 1926, at the invitation of Dr. McCrae, again a major influence in his career, Dr. Gordon became instructor in medicine at the Jefferson Medical College and an assistant director of the hospital's department of diseases of the chest.

Three years later he met and married Frances Giltinan, a native of New York State but long a resident in Philadelphia. She died in 1931, eight months after the birth of their son, Burgess L. Gordon, 3d, who, now 21, is living and working in Philadelphia. Dr. Gordon married again in 1942, several months before he went off in World War II to Egypt as chief of medical service with the 38th General Hospital. His wife, with whom he lives now in the Drake Hotel, Philadelphia, is the former Margaret Huston of Moorestown, New Jersey, an indefatigable assistant in the almost endless studies into which Dr. Gordon's ever-inquiring mind leads him.

His first wife died of tuberculosis, a disease which Dr. Gordon has fought calmly, thoughtfully, relentlessly in classroom, laboratory, clinic and sanatoriums over so many years.

Always he has had the courage to be a pioneer—the courage and the imagination. For example, in 1934, he started in the chest department of the hospital to inquire into the therapeutic value of different color schemes and of good paintings by contemporary artists. These were the first explorations of the kind on a wide scale in any major hospital. They gave rise to a very definite trend throughout the country.

Dr. Gordon discovered that pink and peach were the best colors for women patients, green for men. In fine arts, the women preferred rural home scenes. The men favored seascapes and landscapes.

The constructive results, explains Dr. Gordon, are in terms of cooperation of the patient in furthering his own recovery. He is lifted out of his pessimism by the shrewdly contrived pleasantness of his surroundings. His spirit is lifted and he seizes upon a hope that he will recover.

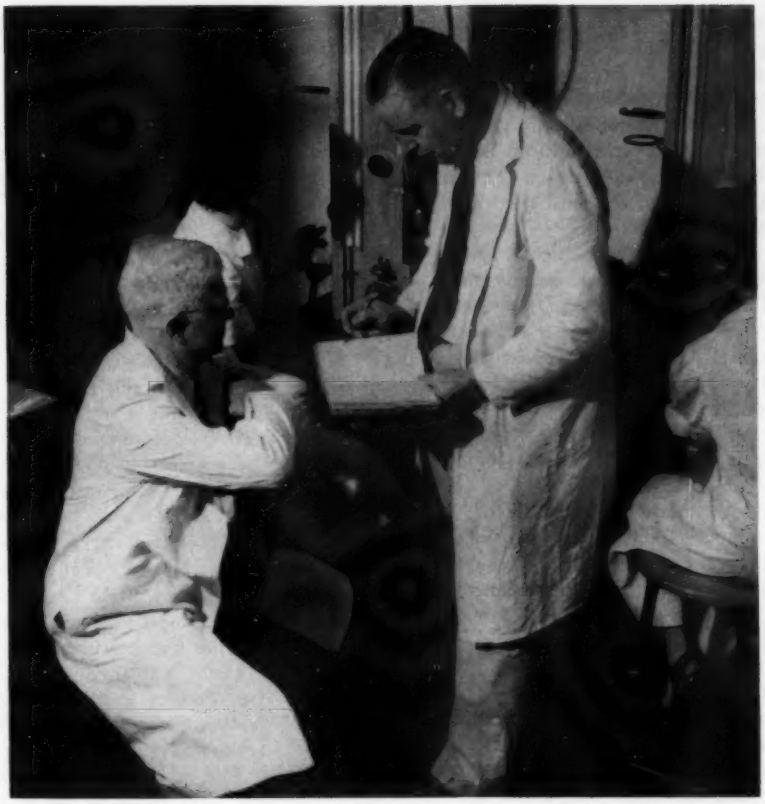
Also, in keeping with his concepts of a curative atmosphere, Dr. Gordon introduced soft recorded music for the patients.

Working again on their minds as well as their bodies, he organized graduation exercises, a sort of spur to keep them well once they recovered. To be graduated—the last commencement was held at White Haven Sanatorium on June 30—those with arrested tuberculosis must go back to their previous jobs or to better ones and remain cured for two years.

Jolly, possessed of an energy matched only by his curiosity, Dr. Gordon has served Jefferson, its patients and its students for a quarter of a century. And he has served whoever else needed his help.

One of those latter was an elderly gentleman who not much aided by his bifocals was having difficulty in obtaining a pamphlet he wanted at the College of Physicians in Philadelphia. Dr. Gordon got it for him, learned he was Dr. Laurence F. Flick, retired then, who founded White Haven Sanatorium and Phipps Institute, and was one of the city's elder statesmen of medicine.

Several days later, Dr. Flick asked Dr. Gordon to call, requested his help in using money contributed by a Fred Kirby, founder of the Woolworth chain, in rescuing Douglass Hospital, a badly run-down Negro institution in



Dr. Burgess Lee Gordon (seated left) goes over calculations of blood studies with Dr. Hurley L. Motley. The picture was taken in the Cardiorespiratory Laboratory at the Barton Memorial Hospital in Philadelphia.

Philadelphia. Dr. Gordon took the job, became for a time the only white man on the board of trustees, served as consulting physician and eased the way for a merger with Mercy Hospital, another Negro institution, in 1947.

Meanwhile, Dr. Gordon became a visiting physician and trustee at White Haven, which today is one of two divisions within Jefferson Hospital's department of diseases of the chest. The other, which was established in the Old Broad Street Hospital, is the Barton Memorial Division.

These are the divisions in which is centered Dr. Gordon's work on silicosis.

At White Haven, in Pennsylvania's hard coal region, Jefferson doctors had observed for years that silicosis was incurable and progressive, particularly with exposure and even if the victims left the mines. There was a marked discrepancy between symptoms and the signs revealed by x-ray.

In 1946, Dr. Gordon went to Thomas Kennedy, Vice President and Secretary of the United Mine Workers and onetime Lieutenant Governor of Pennsylvania. He lives in Hazelton, in the anthracite area.

Dr. Gordon had a proposal—the UMW should put up money to fight silicosis out of the Anthracite Health and Welfare Fund and Jefferson would do the fighting.

Union and hospital representatives met and developed a formula all approved. One third of the funds allocated would be for care of miners, one third for investigation into the nature of silicosis and one third for developing equipment for study treatment.

Afflicted miners are examined and given preliminary treatment at the Barton Memorial Division. They are then sent home or to White Haven. The treatment developed by Dr. Gordon

together with Dr. Hurley L. Motley, physiologist at Barton, is known as intermittent positive inspiratory pressure breathing with oxygen 100 per cent introduced through a Bennett valve.

The oxygen, at slightly greater pressure than atmospheric, is introduced in accordance with the natural breathing of the patient. It is not forced in and can be halted as naturally as air normally drawn in.

Patients have difficulty in getting all air out of their lungs, so the residual air becomes dead. The oxygen dilutes and freshens that dead air, gives the air sacs a better chance to function normally. An improvement in 5 to 10 per cent of the affected sacs can decrease the patient's discomfort enormously.

Since 1946, Dr. Gordon said, some 750 miners have been treated. Some have gone back to work—to jobs other than in the mines. Sixty per cent showed improvement.

But only the surface has been scratched. Dr. Gordon estimated that 80 per cent of all anthracite miners over 40 have manifest silicosis.

And the disease is not limited to the anthracite fields, he added. Almost 100 bituminous miners from Georgia, West Virginia, Illinois, Alabama and Western Pennsylvania have been found to have silicosis. Contrary to popular belief, he added, silica is encountered in soft coal minings and the disease is far more widely spread than most people suspect.

SEEKING to improve the instruments through which he tracked the nature and variations of disease, to make them more responsive, to make them tell a fuller story, Dr. Gordon called upon the mechanical aptitude he displayed as a boy in his Spokane home workshop.

In the early 30's, while he was examining a woman with a stethoscope, she cried suddenly, "My, that's cold!" About the same time, a man patient complained that it hurt when Dr. Gordon, seeking to make complete contact, pressed the hard metal ring of the pick-up bell against the uneven surface of the man's ribs.

Those two instances set Dr. Gordon off on the search for an improved stethoscope. He made models with rubber contacts which would not be cold, were soft enough to adapt to uneven surfaces and yet highly conductive for sound. He tested them against the walls of his offices, listening to the noises in the walls, the throbbing of electric motors in the basement, the gurgling of the plumbing, the slap of a pulley belt.

His Gordon stethoscope, the one he evolved from these experiments, doesn't hurt and retains a comfortable temperature. Also, the metal parts are set at such an angle that the chance of pinching the rubber tubes is minimized when the instrument is in use. It is now manufactured and sold commercially and widely used.

Dr. Gordon and the late Dr. Elmer H. Funk, who preceded him as director of the chest department at Jefferson, developed the electric thermometer to obtain a continual, 24 hour record of a patient's temperature variations. They became suspicious that they were missing significant changes in the routine twice-a-day or thrice-a-day temperature checks. Many tubercular patients were doing badly despite the fact that their temperatures taken, for instance, at 8 A.M., 4 and 8 P.M., were normal.

The electric thermometer, registering continually and automatically, revealed strange temperature cycles, highs late at night and lows during the day and repeated highs between the times routine temperature readings were made.

Light was shed into many dark areas. The two doctors learned, for example, that a dead body under certain circumstances cooled after fever slower than the body of a living person.

The really vital value of the instrument for Dr. Gordon, as he put it, was that it made him more critical of his own procedures and clinical findings.

In 1938, Dr. Gordon developed a support which exerted pressure on the apex of the abdominal area thus lifting the diaphragm and facilitating easier respiration for those with pulmonary conditions.

In more recent years, Dr. Gordon has turned his inventive talents to supporting a relaxation hobby—the making of toys. He has invented a crying doll, whose tears can be controlled by pressure on the stomach. Also among his hobby products is a dancing doll, one built around a gyroscope. There is also a self-powered duck for bathtub excursions.

The second World War carved a piece out of Dr. Gordon's career starting in 1942 when he went as chief of the medical service to Texas and then to Egypt with the 38th General Hospital, a Jefferson Hospital unit.

Progressively, in varying capacities, he served with hospital units in Israel, Iraq, Iran and India, was chief of medical service at the U. S.

Army Hospital at Camp Pickett, Virginia, was discharged with rank of Colonel in 1945, and since has been consultant to the Surgeon General of the Army.

WHATEVER has befallen Dr. Gordon, there have always been, he says, strong compensations. That was true even when during his war duty abroad in Khorramshahr, Iran, he was bowled over by dread smallpox, a new and strange variety to western medicine. After his recovery—the convalescence was in Teheran, Iran, where he lived the life that Reilly might have envied—he was a guest at a pox party staged by a tribe of Arabs. It consisted of mass feasting and vaccinations. One of the tribe had come down with smallpox. The pustules were broken with a pin, just an ordinary pin innocent of sterilization, and then all the well members of the tribe, not previously vaccinated, were scratched with the pin. This primitive preventive medicine, Dr. Gordon learned, frequently killed off two or three of the tribe.

Dr. Gordon came winging back from India and the war in 52 hours and in tropical clothing from a temperature of 95 degrees to bitter December cold in Washington, D. C.

He got the chance to come home because there was a plane crash north of Calcutta, because Brigadier General LaVerne G. Saunders was hurt in it—and also because he was due to be sent home long before. He brought General Saunders home with him, attending his medical needs enroute.

Dr. Gordon is on the Board of the Philadelphia Tuberculosis and Health Association. He is a member of the Council of the College of Physicians of Philadelphia, Regent in the eastern states of the American College of Chest Physicians, Diplomate of the American Board of Internal Medicine, a member of the Advisory Committee of the Visiting Nurse Society, of the American Trudeau Society, of the American Medical Association, the Association of American Physicians, the American Society for Clinical Investigation, the American College of Physicians, the Pennsylvania State Medical Society, the Philadelphia County Medical Society and the Sociedad Mexicana de Estudios sobre Tuberculosis.

He is an adjunct physician at Pennsylvania Hospital, consulting physician at All Saints' Hospital for Treatment of Tuberculosis, and a member of the medical staff at Episcopal Hospital, all in Philadelphia.

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Poliomyelitis Research: Some Recent Contributions

HARRY M. WEAVER*

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, NEW YORK CITY

THE incidence of poliomyelitis in the United States has been extraordinarily high for three successive years. For comparison, the cases reported annually averaged 6,398 over the five-year period 1938-1942, and 16,306 from 1943 through 1947. In 1948, 27,902 cases were reported and in 1949, 42,173, the highest number on record. The total for 1950 is 33,351 and ranks as second highest. From fragmentary evidence it seems likely that the following countries experienced an unusually high incidence of poliomyelitis during 1950: Australia, Chile, German Federal Republic, Greece, Malta, Northern Ireland, Scotland, Spain, United Kingdom.

A small-scale epidemic occurred in Israel in 1949 (111 cases), followed by a severe one in 1950 (more than 1500 during the first 10 months). Earlier, the highest annual total of cases reported from that area was 62, in 1939. This is the most recent example of the transition of poliomyelitis from endemic to epidemic form, a change which has occurred in several other countries since the final decades of the nineteenth century.

Epidemiologically, poliomyelitis is not a single disease, but a group of diseases clinically indistinguishable. Individual "strains" of the causative virus have been isolated from hundreds of patients by monkey inoculation. Each has produced the typical disease in that animal. But three of the strains, called Lansing, Brunhilde and Leon, are immunologically distinct from each other. They have served as prototypes for the classification of a few other strains on which data are available.[1,2]

In 1949 a comprehensive typing program was undertaken by four laboratories. This work is still in progress but well advanced. The data, when published, should show: (1) whether the additional strains tested all conform to the three known types or not, (2) the relative frequency of association of the different types with clinical poliomyelitis and (3) the geographic distribution of the several types. A sample of gamma globulin, prepared from pooled plasma of a large number of American adults, was found to neutralize Lansing, Brunhilde and Leon viruses in high and approximately equal dilution.[3] This suggests that in the United States the distribution of all types of the virus may be similar.

It must be realized that while infection by the virus of poliomyelitis is very common, clinically recognizable disease is a relatively exceptional consequence. The common, inapparent type of infection can be detected only by isolation of virus during the brief carrier state or, after the event, by demonstrating a rise in specific serum antibodies. Serum tests against Lansing-type virus are relatively easy, since mice can be used as test animals. Tests against the non-Lansing viruses require primates and have been conducted on a much smaller scale.

In a recent study on 970 subjects in Baltimore, antibodies against Lansing virus were found in the blood of 72 per cent of infants under 3 months of age. Presumably this represented passive transfer of maternal antibody, since earlier workers had found the antibody status of newborn infants to conform to that of the mother. The percentages found positive at later ages were: 1 year, 10 per cent; 4 years, 49 per cent; 5 to 9, 72 per cent; 10 to 14, 84 per cent; over 15, 89 per cent. Presumably the increasing percentages after the first year reflect the acquirement of active immunity through inapparent infections. In repeated tests on the same subjects, at six-month intervals, it was noted that changes from negative to positive occurred almost entirely during the summer months. Thus there

(Continued on page A-50)

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appears to be a seasonal variation of inapparent infections similar to that of clinical poliomyelitis.[4]

Comparable data, on the age distribution of Lansing antibodies among natives of Pacific Islands and in the Orient, are reviewed by Hammon. In these populations, poliomyelitis has not become epidemic. But the children develop Lansing antibodies at a much earlier average age than do American children. Poliomyelitis is said to be rare among Guamanian natives, but over 50 per cent showed Lansing antibodies at 1 year of age.[5]

In short, the available evidence is that antibodies against Lansing virus are acquired by the great majority of persons throughout the world before maturity. An exception to this appears in a recent report,[6] on two relatively isolated communities of Eskimos in northern Alaska. Among 243 subjects, antibodies were present in more than 80 per cent of those above the age of 20, but were absent, with very few exceptions, in all below 20. There had been fatal cases of supposed poliomyelitis in the area 20 years before, but no illness suggesting poliomyelitis since that time. In this connection, it may be recalled that the severe outbreak among Eskimos in northern Canada reported in 1949[7] showed an unprecedentedly high morbidity and mortality rate particularly among adults. This strongly suggests that the population had not previously been in contact with the virus.

Patients with acute poliomyelitis show antibody against the infecting strain of virus near the onset of symptoms, and the titer rises during the period of convalescence.[8,9]

Immunity against the Lansing virus is transmitted from vaccinated (immunized) female mice to their offspring. This transfer takes place at least in part after birth, by way of the milk.[10] Human milk has been shown to inactivate Lansing virus *in vitro,* samples obtained early in lactation being most active in this respect. Cow's milk has also been found to inactivate the virus, but less regularly. The experimental data suggested that the antiviral substance in human milk might or might not be identical with serum antibody.[11] The significance of these findings, in relation to the protection of humans against paralytic poliomyelitis, is not yet known.

Several British and Australian observers have reported that during outbreaks of poliomyelitis a considerable number of paralytic cases is found among children who have recently received inoculations for immunizing against other diseases, with an evident tendency for paralysis to occur in the inoculated limb.[12]

Analysis of data from the epidemic of poliomyelitis in Minnesota during 1946 confirms earlier reports of a relatively high incidence of poliomyelitis, particularly of the bulbar type, among children recently subjected to tonsillectomy.[13] The reports cited, on poliomyelitis following immunizing injections or tonsillectomy, note that the interval between operation and onset of disease is most commonly within the usual range of the incubation periods of poliomyelitis. There appears to be no evidence of any added risk of poliomyelitis from either of these procedures except when they are performed at the time of and within an area experiencing an epidemic of poliomyelitis.

Physical exertion, after the first signs of illness have appeared, would also seem to be an adverse influence on the course of poliomyelitis.[14,15] A recent study[16] suggests that susceptibility to paralytic poliomyelitis might be enhanced by some metabolic change in the host related to that induced by cortisone.

Apparently, following infection with the virus, there is a rather delicate balance between virus and host which may be influenced favorably, in some degree, by bed rest and unfavorably by such factors as exertion, tonsillectomy, inoculations for treating or immunizing against diseases other than poliomyelitis, pregnancy[17,18] and chilling.[19] But there is no reason to believe that bed rest can wholly prevent the paralytic disease, nor that paralysis is in all cases precipitated by any of the adverse factors mentioned.

CONTINUATION of studies on growth of the virus in tissue cultures has opened the possibility of simplifying laboratory technics for: (1) detection of virus in suspected materials and (2) identification of virus types. Strains of poliomyelitis virus have for the first time been recovered by inoculation of tissue cultures with infected materials without resort to animals.[20] The virus in tissue cultures produces characteristic effects on the host cells, which effects are inhibited by type-specific poliomyelitis antibodies.[21]

Numerous workers in the past have attempted to develop a complement fixation test for poliomyelitis, but have encountered difficulty in preparing antigens capable of yielding reproducible and specific results. Casals and Olitsky[22] have recently reported development of a satisfactory antigen with the MEF_1 strain of virus (Lansing type).

The relation of the Coxsackie group of viruses to poliomyelitis in general, and particularly to the paralytic disease, is still unsettled. Isolation of the first virus of this group was reported in 1948.[23] At least seven immunologically distinct types of this virus are now recognized.[24] They have been isolated from human patients with various symptoms,[25] many from cases diagnosed as poliomyelitis. Coxsackie and poliomyelitis viruses have been isolated simultaneously from some paralytic cases. In such instances, a concurrent rise of antibody titer against both viruses during convalescence has been reported.[26]

(Continued on page A-52)

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REFERENCES

1. Kessel, John and Pait, C. F.: Differentiation of three groups of poliomyelitis virus. Proc. Soc. Exper. Biol. & Med. 70:315-316, 1949.
2. Bodian, David, Morgan, Isabel M. and Howe, Howard A.: Differentiation of types of poliomyelitis viruses. III. The grouping of fourteen strains into three basic immunological types. Am. J. Hyg. 49:234-245, 1949.
3. Bodian, David: Neutralization of three immunological types of poliomyelitis virus by human gamma globulin. Proc. Soc. Exper. Biol. & Med. 72:259-261, 1949.
4. Turner, Thomas B., Hollander, D. H., Buckley, Sonia, Korko, U. Pentti and Winkol, C. P.: Age incidence and seasonal development of antibodies to Lansing poliomyelitis virus. Am. J. Hyg. 52:323-347, 1950.
5. Hammon, W. McD.: Immunity in poliomyelitis. Bact. Rev. 13:135-159, 1949.
6. Paul, J. R. and Riordan, J. R.: Observations on serological epidemiology. Antibodies to the Lansing strain of poliomyelitis virus in sera from Alaskan Eskimos. Am. J. Hyg. 52:202-212, 1950.
7. Adamson, J. D., Moody, J. P., Peart, A. F. W., Smillie, R. A., Wilt, J. C. and Wood, W. J.: Poliomyelitis in the Arctic. Canad. M. A. J. 61:339, 1949.
8. Hammon, W. McD. and Roberts, E. C.: Serum neutralizing antibodies to the infecting strain of virus in poliomyelitis patients. Proc. Soc. Exper. Biol. & Med. 69:256-258, 1948.
9. Steigman, A. J. and Sabin, A. B.: Antibody response of patients with poliomyelitis to virus recovered from their own alimentary tract. J. Exper. Med. 90:349-372, 1949.
10. Thompson, R. and Meyers, F. P.: Passive transfer of immunity to Lansing virus from actively immunized mothers to young mice. Am. J. Hyg. 52:213-221, 1950.
11. Sabin, A. B.: Antipoliomyelitic substance in milk of human beings and certain cows. Am. J. Dis. Child. 80:866-867, 1950.
12. Hill, A. B. and Knowelden, J.: Inoculation and poliomyelitis; a statistical investigation in England and Wales in 1949. Brit. M. J. 2:1-6. 1950.
13. Anderson, G. W., Anderson, G., Skarr, A. E. and Sandler, F.: The risk of poliomyelitis after tonsillectomy. Ann. Otol., Rhin & Laryng. 59:1-12, 1950.
14. Rumell, W. R.: Paralytic poliomyelitis: the preparalytic stage and the effect of physical activity on the course of the disease Brit. M. J. 1:465, 1949.
15. Horstmann, Dorothy M.: Acute poliomyelitis. Relation of physical activity at the time of onset to the course of the disease. J.A.M.A. 142:236-241, 1950.
16. Schwartzman, G.: Enhancing effect of cortisone upon poliomyelitis infection (strain MEF1) in hamsters and mice. Proc Soc. Exper. Biol. & Med. 75:835-838, 1950.
17. Aycock, W. Lloyd: Acute poliomyelitis in pregnancy. Its occurrence according to the month of pregnancy and sex of fetus New England J. Med. 235:160, 1946.
18. Taylor, E. Stewart and Simmons, J. M.: Acute anterior poliomyelitis in pregnancy. Am. J. Obst. & Gynec. 56:143-151, 1948.
19. Levinson, Sidney O., Milzer, Albert and Lewin, Philip: Effect of fatigue, chilling and mechanical trauma on resistance to experimental poliomyelitis. Am. J. Hyg. 42:204, 213, 1945.
20. Enders, John F.: Personal communication to the author.
21. Robbins, F. C., Enders, J. F. and Weller, T. H.: Cytopathogenic effect of poliomyelitis viruses *in vitro* on human embryonic tissues. Proc. Soc. Exper. Biol. & Med. 75:370-374, 1950.
22. Casals, Jordi and Olitsky, Peter K.: A complement-fixation test for poliomyelitis virus. Proc. Soc. Exper. Biol. & Med. 75:315-318, 1950.
23. Daldorf, Gilbert and Sickles, Grace M.: An unidentified, filtrable agent isolated from the feces of children with paralysis. Science 108:61-62, 1948.
24. Melnick, J. L. and Kraft, Lisbeth M.: Differentiation of immunologic types among the Coxsackie viruses. Federation Proc. 9:585-591, 1950.
25. Curnen, E. C.: Human disease associated with the Coxsackie viruses. Bull. New York Acad. Med. 26:335-342, 1950.
26. Melnick, J. L.: The poliomyelitis, encephalomyocarditis, and Coxsackie groups of viruses. Bact. Rev. 14:233-234, 1950.

STATEMENT OF N.F.I.P. ON RELATIONSHIP OF IMMUNIZATION PROCEDURES AND PARALYTIC POLIOMYELITIS

The possible relationship between paralytic poliomyelitis and injections for immunizing against whooping cough, diphtheria, tetanus, or injection of other biologic and medicinal substances recently has been the subject of intensive study by English, Australian and American workers.

Cases of paralytic poliomyelitis were studied in respect to injections of the substances mentioned above prior to onset of the disease. When such an injection had been received within the month immediately preceding, the limbs in which the injections had been made were paralyzed more frequently than were the corresponding limbs of cases with no history of recent injections. No such relationship has been found in cases where such injections had been given more than a month before the onset of poliomyelitis.

The studies do *not* show that injections for the prevention of whooping cough, diphtheria, tetanus, or injections of other medicinal substances, are the cause of poliomyelitis. The great majority of cases of poliomyelitis give no history of recent injections. There is no evidence that poliomyelitis infection is any more frequent among persons who receive such injections than among those who do not. The possibility that an injection may in some way tend to convert an otherwise nonparalytic into a paralytic infection should be considered although it lacks proof. If established, it would mean that an injection of any of the substances mentioned, at a time when poliomyelitis is abnormally prevalent in the community, may entail some small added risk to the person receiving it. There is no reason to believe that the added risk would extend beyond the month immediately following the injection, or that any added risk exists at all if injections are given at a time when poliomyelitis is not prevalent in the community.

In addition to the studies on human beings, there have been two reports of experiments on animals. These suggest that the interval between an injection of the virus of poliomyelitis and onset of paralysis is shorter in those animals previously injected with certain immunizing substances.

However, these animal experiments do not give any real basis for deciding on the safety of immunizing a child in a given situation. Physicians are well aware that many medical procedures involve calculated risk. The relative risks of giving or withholding an injection must be weighed in each individual case. Whether an injection of a medicinal substance is needed can be determined only by the physician dealing with a specific patient. He must determine in each case when injections are and are not warranted.

Studies on the relationship of paralytic poliomyelitis to injections of medicinal substances have not been completed nor have the results been properly evaluated as yet. Results reported to date are tentative and should not be considered at this time as final evidence. They should be considered only in the light of a warning against indiscriminate injections during periods of poliomyelitis epidemics.

Hart E. VanRiper, M.D., *Medical Director*

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FOLVITE* folic acid	1.7 mg.
Ferrous sulfate exsiccated	0.194 gm. (3 gr.)
Vitamin B_{12a}-B_{12} (as present in concentrated extractives from streptomyces fermentation)	5.0 micrograms

INDICATIONS FOR USE: In anemias occurring in sprue, pregnancy, pellagra, infancy and gastrointestinal anemia as well as for nutritional, postinfectious and primary microcytic types. May be used in conjunction with parenteral liver extract or NORMOCYTIN* vitamin B_{12a}-B_{12} in iron-deficient pernicious anemia.

HOW SUPPLIED: Bottles of 100, 500 and 1,000 capsules.

PRODUCER: Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y.

*Reg. U. S. Pat. Off.

GYNETONE TABLETS

PURPOSE: Single dose form of estrogenic and androgenic steroids for treatment of the menopause.

COMPOSITION: Each tablet contains 0.5 mg. estradiol U.S.P. and 5.0 mg. methyl testosterone U.S.P.; or 1.0 mg. estradiol U.S.P. and 10.0 mg. methyltestosterone U.S.P.

DOSAGE AND ADMINISTRATION: Dosage with higher potency tablet should be limited to one tablet daily. If the lower dosage tablet is used, one or two tablets may be given daily, gradually reducing the amount and frequency of the dosage as symptoms are controlled. When possible, gradual reduction of dosage of either strength tablet is recommended.

HOW SUPPLIED: Bottles of 30 and 100.

PRODUCER: Schering Corporation, Bloomfield, N. J.

REDISOL TABLETS

PURPOSE: Oral dosage form of vitamin B_{12}.

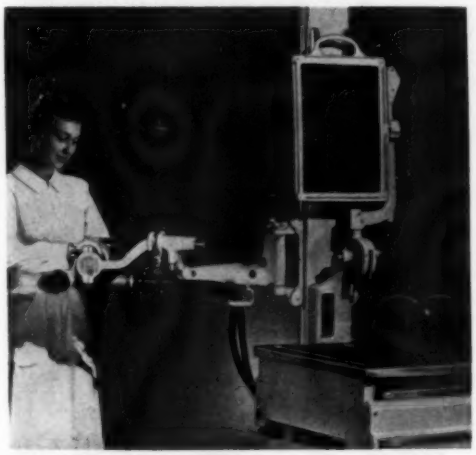
COMPOSITION: Equivalent in activity to 25 micrograms of crystalline vitamin B_{12}.

INDICATIONS FOR USE: In stimulating the appetite and encouraging greater intake of food in cases of anorexia, malnutrition or retarded growth and development.

DOSAGE AND ADMINISTRATION: Dosage should be adjusted to individual needs. May be administered in solution or enclosed in a bolus of suitable food. When dissolved in a liquid other than water, the solution should be administered at once.

HOW SUPPLIED: Bottles of 36 tablets.

PRODUCER: Sharp & Dohme, Inc., Philadelphia, Pa.



ANGULATING SELF-CONTAINED MAXICON

DESCRIPTION: Angulating x-ray table that carries the tube stand as part of the table, thus eliminating the separate tube stand carriage on the floor or ceiling. Thus, both radiography and fluoroscopy can be performed with a single tube. Angulating with the table, the tube remains parallel to the table top. It provides for 40" Bucky radiography or full-length fluoroscopy in all positions from 10° Trendelenburg to vertical. There is a choice of motor-drive or hand-tilt angulation.

HOW SUPPLIED: Through 54 offices in major cities.

PRODUCER: General Electric X-Ray, Milwaukee, Wis.

NEW NEMBUTAL ELIXIR*

DESCRIPTION: New elixir has the same potency as the old (1 teaspoonful [5 cc.] represents 15 mg. [¼ gr.] of NEMBUTAL sodium) but taste, color, odor, miscibility and compatibility are improved. The substitution of SUCARYL sodium for much of the sugar improves taste and miscibility. Elixir has a *p*H of 4.

DOSAGE AND ADMINISTRATION: Can be mixed with infant's formula or whole milk and will remain stable even when heated. It is compatible with a wide range of drugs but is not compatible with potassium salts.

HOW SUPPLIED: NEMBUTAL elixir, representing 15 mg. (½ gr.) NEMBUTAL sodium per fluidrachm, is supplied in 1 pint shelf-saving and 1 gallon bottles.

PRODUCER: Abbott Laboratories, North Chicago, Ill.

*Trademark.

(Continued on page A-56)

When the diet is deficient in vitamins

THERAGRAN offers your patients the clinically proved, truly therapeutic "practical" vitamin formula* recommended by Jolliffe. (Jolliffe, Tisdall & Cannon: Clinical Nutrition, New York, Hoeber, 1950, p.634.)

THERAGRAN supplies *all* of the vitamins indicated in mixed vitamin therapy in the carefully balanced, *high* dosages needed for fast recovery from mixed deficiencies.

Each Theragran Capsule contains:

Vitamin A	25,000 U.S.P. Units
Vitamin D	1,000 U.S.P. Units
Thiamine Hydrochloride	10 mg.
Riboflavin	5 mg.
Niacinamide	150 mg.
Ascorbic Acid	150 mg.

Bottles of 30, 100 and 1000

*Thiamine content raised to 10 mg.

When you want truly therapeutic dosages specify...

THERAGRAN

for therapy...

and correct the patient's diet

SQUIBB

SERIOGRAPH

DESCRIPTION: New seriograph for cerebral angiography utilizes four 10″ by 12″ cassettes; cassette changing is performed manually. Provides for both anteroposterior and lateral work. Cassette exchange and exposure trigger are both in the hands of the same operator, permitting closest coordination.

Accessories available include a removable lead rubber shield to protect the operator, a compression device for immobilizing the patient and a 10″ by 12″ Lysholm Grid for maximum "cleanup."

PRODUCER: Picker X-Ray Corp., New York, N. Y.

MULCIN

DESCRIPTION: Pleasant-tasting, orange flavored, water-dispersible emulsion containing six essential vitamins.

COMPOSITION: One teaspoonful supplies the recommended daily allowance for infants and children.

HOW SUPPLIED: In 4 oz. and 16 oz. bottles.

PRODUCER: Mead Johnson & Co., Evansville, Ind.

OBEDRIN TABLETS

PURPOSE: Treatment of obesity.

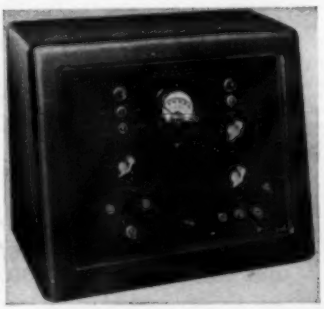
COMPOSITION: Each tablet contains:

Semoxydrine hydrochloride	5 mg.
Pentobarbital sodium	20 mg.
Ascorbic acid	100 mg.
Thiamine hydrochloride	0.5 mg.
Riboflavin	1 mg.
Niacinamide	5 mg.

DOSAGE AND ADMINISTRATION: Patient should be instructed to take 1 tablet between 10:00 and 11:00 in the morning and another tablet between 3:00 and 4:00 in the afternoon. A third tablet can be prescribed between 7:00 and 8:00 in the evening.

HOW SUPPLIED: Bottles of 100, 500 and 1000 yellow, grooved tablets.

PRODUCER: The S. E. Massengill Co., Bristol, Tenn.



WEISS TWO-CIRCUIT GENERATOR FOR HYDRO-GALVANIC THERAPY

DESCRIPTION: Features of the instrument include: painless, high speed sinusoidal currents; silent, full wave and half wave rectification; improved filter system. Available in two models—office and portable. Fully guaranteed for two years. Complete information available from:

PRODUCER: J. Burnside Co., 1148 E. Grand St., Elizabeth, N. J.

TABLETS HEPATINIC*

PURPOSE: Hematinic and nutritional supplement.

COMPOSITION: Each capsule-shaped orange tablet represents:

Ferrous sulfate	167 mg.
Liver concentrate	333 mg.
Vitamin B_{12}	1 microgram
Thiamine hydrochloride	1 mg.
Riboflavin	2 mg.
Niacinamide	10 mg.

INDICATIONS FOR USE: In secondary or hypochromic anemias.

PRODUCER: McNeil Laboratories, Inc., Philadelphia, Pa.

*Trademark.

NEW SURGICAL FILMS

DESCRIPTION: Eleven new color films are being added to the Surgical Film Library of Davis & Geck, Inc. Prints in color are available on a loan basis, without charge, to hospitals, medical schools (under the signature of a licensed physician), nurses' training schools and other accredited medical and surgical groups. All films are 16 mm. wide and silent, with the exception of the film, "Hypertension Due to Pheochromocytoma," which is available in sound only. Titles of new releases and further information available from:

PRODUCER: Surgical Film Library, Davis & Geck, Inc., 57 Willoughby St., Brooklyn 1, N. Y.

(Continued on page A-58)

Therapeutic dosages give therapeutic results

"...recovery from a nutritional deficiency is usually retarded if one depends only upon the vitamins supplied in food." (Spies and Butt in Duncan: Diseases of Metabolism, ed. 2, Phila., Saunders, 1947, p.495)

***When you want* all *of the vitamins indicated in mixed vitamin therapy in the necessary* high *dosages ... specify* THERAGRAN**

Each Theragran Capsule contains:

Vitamin A	25,000 U.S.P. Units
Vitamin D	1,000 U.S.P. Units
Thiamine Hydrochloride	10 mg.
Riboflavin	5 mg.
Niacinamide	150 mg.
Ascorbic Acid	150 mg.

Bottles of 30, 100 and 1000

THERAGRAN

THERAPEUTIC FORMULA VITAMIN CAPSULES SQUIBB

SQUIBB

"THERAGRAN"—T. M., E. R. SQUIBB & SONS

SKLAR ELECTRIC EVACUATOR

PURPOSE: Controlled low grade suction and pressure in preoperative and postoperative procedures.

DESCRIPTION: Designed for the Wangensteen technic. Features include an intermittent "on and off" pilot light, an automatically ventilated motor unit and minute control over the range of suction and pressure. Suction is calibrated from 50 to 250 cm. of water.

The stand is mounted on casters, and the unit is finished in ivory baked enamel. Equipment includes a gallon-size suction bottle, a 32 ounce irrigating bottle and a trap bottle. Operates on 110-120 volt, 60 cycle alternating current. Unit carries a two year guarantee.

PRODUCER: J. Sklar Mfg. Co., Long Island City, N. Y.

ASTEROL

PURPOSE: Treatment of ringworm of the scalp, athlete's foot and other fungous infections of the hair, skin and nails.

COMPOSITION: Dihydrochloride of 2-dimethylamino-6 (beta-diethylamino-ethoxy)-benzothiazole.

HOW SUPPLIED: As a 5 per cent tincture (2 oz. and 16 oz. bottles), as a 5 per cent ointment (1 oz. collapsible tubes and 1 lb. jars) and as a 5 per cent dusting powder (1½ oz. containers).

PRODUCER: Hoffmann-LaRoche, Inc., Nutley, N. J.

TRUOZINE* DULCET TABLETS, TRUOZINE TABLETS AND TRUOZINE SUSPENSION

PURPOSE: Combined sulfonamide therapy.

COMPOSITION: Each Truozine Dulcet tablet contains:

Sulfadiazine	0.1 gm.
Sulfamerazine	0.1 gm.
Sulfamethazine	0.1 gm.

in green, aromatic, candylike sugar tablets.

Each Truozine Tablet contains 0.167 gm. (2½ gr.) of each of the three drugs. Each teaspoonful (5 cc.) of Truozine Suspension contains 0.1 gm. (1½ gr.) of each of the three drugs in mint-flavored aqueous solution.

INDICATIONS FOR USE: In infections due to hemolytic streptococci, alpha hemolytic streptococci, staphylococci, pneumococci, meningococci, gonococci, Friedlander's bacillus, *H. influenzae*, *S. madampensis*, *E. coli*, dysentery bacilli and *Actinomyces*.

DOSAGE AND ADMINISTRATION: Initial doses for children based on 100 mg. per kilogram of body weight, rounded to the nearest multiple of 0.15 gm. Dosage should be adjusted to each case, from 65 to 100 mg. per kilogram. Maintenance doses to be given at 6-hour intervals. In severe infections, it may be desirable to increase the dosage. Tablets may be chewed or crushed and given in a half-teaspoonful of water.

HOW SUPPLIED: Truozine Dulcet Tablets, 0.3 gm., in bottles of 100. Truozine Tablets. 0.5 gm. (7½ gr.), grooved, in bottles of 100 and 1000. Truozine Suspension, in 1-pint bottles.

PRODUCER: Abbott Laboratories, North Chicago, Ill.

*Trademark.

New products approved for inclusion in this department but for which space is not available this month are listed below. Detailed descriptions of these drugs and instruments will be printed in subsequent issues.

Arobon (The Nestle Co.)
Desitin Lotion (Desitin Chemical Co.)
Dodex A-B-D Drops (Organon Inc.)
Elixir Butisol-Belladonna (McNeil Labs)
Elixir Slowten (E. L. Patch Co.)
Eskaphen B Tablets (Smith, Kline & French)
Film Dryer (Westinghouse X-Ray)
Kaophyl Capsules (Warren-Teed)
Kwell Lotion (Commercial Solvents Corp.)
Lab-Kleen Concentrate (Readinger Corp.)
Pabalate-Sodium Free (A. H. Robins Co.)
Polysorb (E. Fougera Co.)
Pre-Threaded Anacap Silk (Davis & Geck)
Tech-Angle-Aid (Westinghouse X-Ray)
Truozine Dulcet Tablets with Penicillin (Abbott Labs)
Truozine Tablet with Penicillin (Abbott Labs)
Truozine Sodium 6% Solution (Abbott Labs)
Turased (E. L. Patch Co.)
Varidase (Lederle Labs)
Westex Combination X-Ray Unit (Westinghouse X-Ray)
Westex Timer (Westinghouse X-Ray)

more effective against

tinea capitis

"More effective in ringworm of the scalp than any other topical agent."[1]

tinea pedis

In "athlete's foot" a combined cured and improved rate of 95% has been obtained.[1]

Also indicated in

tinea corporis
tinea cruris
tinea versicolor
tinea of the nails

"broad antifungal spectrum ...good cutaneous tolerance."[1]

New!

Asterol® *dihydrochloride*

5% tincture . . . ointment . . . powder . . . sprayed, applied with cotton or dusted on

'Roche'

1. Stritzler, C.; Fishman, I. M., and Laurens, S.: *Transactions New York Acad. Sc., 13*:31, Nov., 1950.

HOFFMANN-LA ROCHE INC • ROCHE PARK • NUTLEY 10 • NEW JERSEY

ASTEROL DIHYDROCHLORIDE 'ROCHE'—BRAND OF DIAMTHAZOLE DIHYDROCHLORIDE [2-DIMETHYLAMINO-6-(β-DIETHYLAMINO ETHOXY)-BENZOTHIAZOLE DIHYDROCHLORIDE]

DR. Pepys' Pages

Personal Diary
and Observations on
Medical Life
by MORRIS FISHBEIN, M.D.

May 25—In the morning with Monsieur La Coste to the Exposition du Centre International de L'Enfance at the Chateau de Longchamp overlooking the race track, a great home built by the perfumer Coty and now used for infant welfare. For an aperitif at the Cascade. In the evening to Chez Louis, where Louis Brzicky specializes in Viennese and Czech dishes. At the hotel met Dr. Mulholland of Virginia returning home from Geneva where he represented the A.M.A. at the W.H.O. Then saw Gloria Swanson in "Sunset Boulevard" which in French is called "Boulevard de Crepuscle," which looks very much like corpuscles.

May 26—Raining and all morning at my trusty Remington Noiseless. At noon to luncheon at Chez Mercier where one finds what Art Buchwald calls the best food of all the inexpensive restaurants near the Champs Elysees. And that's what my friends of UNESCO say too. In the afternoon to stroll again through the Louvre and along the left bank where the book stalls attract the remaining francs. At night somewhat early to bed—1 A.M.—for tomorrow morning we fly across the channel on B.O.A.C. to London and the Festival. For all Americans old Pepys recommends a new little book called "Paris After Dark" by Art Buchwald. Here with great humor is the lowdown on all the best places, a menu dictionary, facts about the theaters, and a priceless piece of humor about Tour d'Argent written by Al Capp.

May 27—Early to the air field at Bourget near Paris, the field where Lindbergh arrived. Then by British European Airways, called BEA, to London, arriving as expected in the midst of cold, rain and fog at Northolt. All afternoon at the British Festival exhibit and found it the height of modernism, utilizing every type of visual education. Thousands of Britishers exhibit their wares integrated with demonstrations of modern homes, school agriculture and industry. All of the notable physicians had portraits in the exhibit except for the panels representing the neurologist Adrian. Hugh Clegg, editor of the *British Medical Journal*, told me later that he believes Adrian has never had a picture taken.

In the afternoon to tea in one of the many marvelous restaurants that dot the Festival grounds and got a three course contribution of food for three shillings. Nevertheless the waitress said that the establishment was in dire straits for income and whispered that she had not had her wages since the place opened. Observed in the London *Times* later that average daily attendance was under 4000 or 5000, hardly enough to support such a tremendous display. Especially exciting was the great dome in which British contributions to discovery and invention were housed.

At night to see played a French motion picture called "LaRonde" based on Arthur Schnitzler's famous play, "Reigen," and the scenery beyond belief but the rewriting of the play somehow made it lose the continuity which was its greatest charm in the original.

May 28—This morning walking about London and all afternoon with Dr. Hugh Clegg at the *British Medical Journal* talking over plans for the meeting of the World Medical Association in Stockholm, and other editorial matters. In the evening to see a humorous play with tragic undertones written by Peter Ustinov called "The Love of Four Colonels." The four colonels are a quadripartite group managing a small section of occupied Germany. Ustinov himself plays the leading role, and old Pepys recommends it as best in current British theater. Next to the nightclub known as the Bagatelle with Charles Tucker and with him Emile Littler, both theatrical producers. Heard here the singing of Margaret Phelan, whom I heard last before the Irish Fellowship Club in Chicago on St. Patrick's day.

May 29—Early this morning with Prof. Dodds to Slough to meet with the directing board, the scientists and the directors of various divisions of the British Horlick Company and saw there a modern plant working at full capacity to prepare products for many areas of the world where famine now prevails. Next a luncheon with this group and back by car with Dr. Britton to London. In the evening to see played Emile Littler's great success, "Dear Phoebe," which is based on Sir James M. Barrie's "Quality Street," a play soft, tender and full of gentility and quiet humor of the atmosphere of 1815 in London.

May 30—All this day visiting the bookstores, particularly Foyle's, greatest of the old book dealers. With Mistress Pepys purchasing some items for the children with Rackham and Dulac illustrations. In the afternoon to see the Festival of Britain at the Battersea Gardens where the entertainment holds forth. Here the best part of the display the little shops especially erected to show some of the finest

(Continued on page A-62)

Prelude to asthma?

not necessarily . . .

Tedral, taken at first sign of attack, often forestalls severe symptoms.

in 15 minutes...Tedral brings symptomatic relief with a definite increase in vital capacity. Breathing becomes easier as Tedral relaxes smooth muscle, reduces tissue edema, provides mild sedation.

for 4 full hours...Tedral maintains more normal respiration for a sustained period—not just a momentary pause in the attack.

Prompt and prolonged relief with Tedral can be initiated any time, day or night, whenever needed without fear of incapacitating side effects.

Tedral provides:

theophylline	2 gr.
ephedrine	3/8 gr.
phenobarbital	1/8 gr.

in boxes of 24, 120 and 1000 tablets

Tedral

CHILCOTT *Laboratories* DIVISION OF The Maltine Company MORRIS PLAINS, NEW JERSEY

wares that England purveys.

In the evening to see played "His Excellency," a drama of Britain under the Labor government, showing how a labor politician succumbs to the existing civilization when he assumes a diplomatic post as governor of a colony like Malta.

May 31—At my Dictaphone all morning getting off the necessary mail and in the afternoon to visit the shops particularly some scarfs at Jacqmar's. Then by the six o'clock train to Southampton and to board the QUEEN ELIZABETH which is to depart early in the morning. And saw again the excruciatingly funny Marx Bros. in "A Night at the Opera."

June 1—A pause at Cherbourg and again on the ocean. For dinner at the table of Dr. S. M. Rust, ship's physician of the Queen Elizabeth, along with Dr. A. Sharman, gynecologist of Glasgow, and Mrs. William Best and her charming daughter.

June 2, 3, 4 and 5—All the days in the usual relaxations of shipboard, reading some excellent writings which I accumulated in my travels. Among them Marguerite Higgins' journalistic "War in Korea," "Ladies Won't Wait" by Peter Cheyney, Britisher who writes of gangsters like an American, and some likeable essays called "Mirror of Harley Street," by Scott Stevenson.

Seeing also some routine motion pictures, evidently all class B, and in the evening to some excellent cocktail parties with Udo Reinach and Willy Turnesa returning from the amateur golf tournament in Britain with Standish of the American golfing group. The horse races and the bingo were unprofitable until the last big game on the last evening in which old Pepys shouted BINGO with such gusto as to shake the rafters of the Queen Elizabeth, sufficient to accumulate something over 30 pounds.

June 6—On the dock in New York early in the morning and rapidly through the customs and to the Waldorf. In the afternoon to confer with Doubleday about new books. In the evening with Herbert and Grace Mayes to the Stork Club, and thereafter to see Nannette Fabray in a new comedy, "Make a Wish," which was pleasant with good music and plenty of dancing; ideal fare for a summer evening.

June 7—Early awake and to the office of the International Poliomyelitis Congress to report there on the progress of events with this congress in Copenhagen, and to consider its constitution. At noon to a luncheon with some advertising agents and in the afternoon to confer at some length with Helmuth Kiesewetter. At night to dine with Sam and Ruth Hoffman and Mark Soroko and his lady and several others at Monty's, eating some excellent borscht and watching Hoffman enjoy something called "flanken" which is one of his favorites.

June 8—At my Dictaphone. While reading found two fine schoolboy definitions: "Natural immunity is catching a disease without the aid of a physician." "A psychiatrist is a doctor with mental disorders."

At night with the Van Ripers to the Starlight Roof where Xavier Cugat plays to pay his income tax.

June 9—By the noon train to Atlantic City. Here arriving at the Traymore where a great multitude of medicos registering and being greeted by the major domo of the Traymore, Harold Baggs, and along with him David Allman, chairman of the Committee on Arrangements, who was arranging everything and mighty well too. In the evening greeting many more old friends as we strolled along the Boardwalk.

June 10—Lay late reading 18 pounds of eastern morning papers and learning that all is quiet on the medical front. In the afternoon come Scott Stevenson to lunch and gossip as the storm raged. A multitude of friends to our suite and we played at games and enjoyed pleasant discourse. At night with Elmer and Ethel Bobst and Dr. Cooper to dine and then walking with them amidst the raging storm down the Boardwalk to the Ambassador.

June 11—The American Medical Association opens its annual session and some thousands of doctors strive to beat their way into the great exhibit along with women and children and old Pepys, who waited fifteen minutes to register while thinking of the saying on shipboard, "Women and children first." Then into the exhibit and greeted all my friends among the industrial associates of medical practice. Come nightfall to dine with Ernest Irons and Mrs. Irons and with Hart Van Riper and Mary Virginia and with Dr. and Mrs. M. T. Friedell and thereafter to walk the Boardwalk in peace and contentment.

June 12—Early to the exhibits and saw in particular the exhibit of Dr. Cooper of Lancaster, Pa., who drove me some years since from Lancaster to Harrisburg. His exhibit of teamwork control of cleft palate one of the striking demonstrations of the session. And enjoyed particularly his story of the two Pennsylvania Dutch—male and female—who came to a preacher to be married, having by some accident the same name. The conversation follows:

THE PREACHER: What is your name?
SHE: Peggy Stigabus.
PREACHER, to the young man: What is your name?
THE ANSWER: Krug Stigabus.
THE PREACHER: Any relations?
PEGGY STIGABUS: Only once, reverend. We couldn't wait.

(Continued on page A-64)

For added patient benefits per NURSE-HOURS EXPENDED

SPECIFY DERMASSAGE

→→→→ *now with* **HEXACHLOROPHENE**

- **To help prevent bed sores**
- **To aid in massage for every purpose**
- **To promote the patient's comfort**

Dermassage confers certain special benefits not inherent in the massage or in all massage adjuncts, for instance:

SKIN LUBRICATION, provided by lanolin and olive oil in a soothing emollient cream, which reduces the occurrence of skin cracks and irritation resulting from dryness.

REFRESHING COOLNESS, produced by true Chinese menthol crystals in liberal proportion. Rapid evaporation and loss of skin moisture are avoided.

BACTERIA REDUCTION with hexachlorophene, effective germicidal agent of low toxicity. Minimizes risk of initial infection; an added protection where skin breaks occur in spite of precautions.

DEODORANT VALUE, supplied by hexachlorophene.

A safeguard against skin discomfort or damage while patient is confined to bed or wheel chair. Used and approved in thousands of hospitals, coast-to-coast, and on the recommendation of doctors, nurses and hospitals to patients returning home.

CLIP HERE and attach to your LETTERHEAD for a

Liberal Trial Sample of EDISONITE SURGICAL CLEANSER

Instruments come spotlessly clean and film-free after a 10- to 20- minute immersion in Edisonite's probing "chemical fingers" solution. Harmless to hands as to metal, glass and rubber.

EDISON CHEMICAL COMPANY
30 W. Washington St., Chicago 2

EDISON'S dermassage™

Patients are GRATEFUL for DERMASSAGE

Have you tested it?

An Established Aid to Patient Care *Now with* New Protective Value

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30 W. Washington, Chicago 2

PM-8-51

Please send me, WITHOUT OBLIGATION, your Professional Sample of Dermassage.

Name.....

Address.....

An equally humorous story of another Pennsylvania Dutchman who refused a raise in salary from $4 to $5 because he feared that when he took a day off he would lose too much money.

In the afternoon again viewing the scientific exhibit and in the evening to a banquet where Francis Redewill presided and where also spoke Anthony Bassler and Dr. Melikoff of the American Physicians' Art Association. Here old Pepys gave an account of his recent journeying abroad.

June 13—In the morning to attend several conferences and at noon to luncheon with Jack Cohen and Helmuth Kiesewetter talking of our projects. Thereafter to view a motion picture showing the use of FURACIN® in burns. Next to attend to some various affairs of various organizations which assemble at the same time as the American Medical Association. Come six o'clock along with several scores of guests to a dinner which Mark Soroko and his dear lady arranged to honor Mistress Pepys. Here Basil O'Connor spoke beautifully, in particular a wisecrack anent the activities of old Pepys in which he proposed that there be placed ultimately on the old gentleman a tombstone which would read: "Here lies old Pepys—God interrupted him."

To the annual convocation of the Silver Slipper Club, an agency of pure entertainment developed by Elmer and Ethel Bobst for their friends and associates, the only club known to history under one management for 26 years without ever a deficit, without ever an assessment, without ever any question of the election of officers. And there was fine entertainment, especially Russell Swan, the magician, whom old Pepys has known now these many years and who does his feats of magic easily and with a sly humor, and in this magic Norman Topping almost lost his head. At last at 2 A.M. walking along the Boardwalk to the Traymore feeling that this day was indeed well spent.

June 14—Again to view many exhibits and to confer with the exhibitors. In the afternoon to speak for the nutrition meeting on "Food, Fads and Follies." Then to the Pennsylvania Station where found Wingate Johnson, DeWitt Clough and Rachel and H. Prather Saunders and many more who were departing for their homes. After a short delay in North Philadelphia on the Broadway Limited back to the Windy City suffering meanwhile with what seemed to be an accumulation of waste products in an intestine that had been overloaded by 35 banquets in 40 nights.

June 15—With all the boxes and bags and suitcases into Chicago. There greeted by all the family and began to unload the gifts from Europe and to analyze stacks and stacks and stacks of mail and books and periodicals.

June 16—To Ravisloe to break open the golf season with some of the poorest golf I have ever played, coming in at last with 101 which some might credit to the Chicago breeze but which old Pepys could credit only to somewhat unaccustomed muscles, nerves and joints.

June 20—The days go by with more and more of the same, including many hours of pounding the scribe machine and then on this day to play at golf with Friedell and succeeded in bringing the 101 down to a 97.

June 22—This morning come Lunoe to discuss the history of Georgia Warm Springs. To the Edmund Jacobsons' for dinner, meeting Hiller, Kirsner, Alving, Hesseltine and many more medicos, and the evening full of exhilarating converse.

June 23—To the golf club and attempted again the difficult angles of the course, coming in at last with a 96 and then performing execrably in gin rummy. Then to dine and to participate in a canasta tournament which turned out to be, as far as the old Pepys team was concerned, a total loss.

June 24—More golf—and a 92.

June 25—To the Tavern Club for luncheon with Herb Graffis and Dave Smart who are about as bright as human beings can be, and we talked of projects in writing and in welfare. Here also come Mr. Kasch of the *Encyclopaedia Britannica* to go over with old Pepys the contributions in the field of medicine for the Britannica *Book of the Year*, and this turns out to be one of the most delightful tasks I know. In the

(Continued on page A-66)

OLD PEPYS' FILOSOFY

You can trust some politicians—medical or otherwise—some of the time, but you can't trust any politician all of the time.

• • •

Emerson said: *"Nothing is at last sacred but the integrity of your own mind."*

• • •

Bill Nye wrote long ago: "The sun cannot be examined through an ordinary telescope with impunity. Only one man ever tried that, and he is now wearing a glass eye that cost him $9."

• • •

You can get a great reputation for knowledge by never admitting that you don't know if you happen to know where you can look it up.

• • •

Schering is distributing a book containing the best hundred medical cartoons of 1950 and I like especially the one of the two rabbits in the cage in the doctor's office. Says one rabbit to the other: "Every time I see a woman come in carrying one of those little bottles, I could scream!"

• • •

London *Punch* has a picture of a psychoanalyst sitting at the head of a couch. Under the couch lies a patient who says: "Ever since I was a little boy I have always been shy!"

• • •

From the *British Medical Journal:* "The general practitioner is tired of being called the backbone of the profession and treated as the tail piece." 1-27-51, p. 175.

• • •

From London *Punch: "National Health opticians are complaining that their margins of profit are too low. All the same for them prosperity is just around the cornea."*

• • •

ATHEROSCLEROSIS

Too Much Cholesterol or Too Little Phospholipids?

Plasma Ratio: $\frac{\text{PHOSPHOLIPID mg. \%}}{\text{CHOLESTEROL mg. \%}}$

INCREASE PHOSPHOLIPIDS

The new isotope technique[3] has demonstrated that:

(a) choline deficiency occurs in man;

(b) phospholipid production is increased in deficiency states by choline;

(c) individuals differ in choline needs;

(Inositol also enters into synthesis of certain phospholipids.[4])

DECREASE CHOLESTEROL

Although cholesterol plasma levels may not be affected by dietary restrictions, the physical state of the cholesterol may be affected. Thus, "giant cholesterol molecules" associated with atherosclerosis may be eliminated by dietary control.[5]

RATIONAL MEASURES

In the light of these recent studies, *adequate* lipotropic therapy and cholesterol-restricted diets are rational measures in:

ATHEROSCLEROSIS
CORONARY ARTERY DISEASES
DIABETES
And Other Unbalanced Conditions
of Disturbed Cholesterol Metabolism

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Supply Therapeutic Dosage of Lipotropics (700 mg.) with Vitamin A and B Complex factors to help compensate for deficiencies of low-cholesterol diets with Rutin and Vitamin C to prevent the retinopathy often associated with above diseases.

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Inositol	200 mg.
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Ascorbic Acid	12.5 mg.
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Thiamine Hydrochloride	1 mg.
Riboflavin	1 mg.
Pyridoxine Hydrochloride	0.25 mg.
Niacinamide	4 mg.
Calcium Pantothenate	1 mg.

BIBLIOGRAPHY

[1]Morrison L.M.: Tests for Atherosclerosis. Proc. AM. Soc. for Study of Atherosclerosis P 478 (1950)

[2]Gertler, M.M.; Stanley M.; Blund, E.F.; Age, Serum, Cholesterol and Coronary Artery Disease. Circulation 2:517 (1950)

[3]Science 109:613 (June 17) 1949

[4]Biochem. J. 40:494 (1946)

[5]Gofman, J.W.; et al.; Science. 111:166 (1950)

SHERMAN LABORATORIES

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late afternoon on the Twentieth Century to New York.

June 26—With Basil O'Connor, R. McIntosh and Snyder for more work on the constitution and by-laws. In the afternoon with Herb Mayes at *Good Housekeeping* and then with Doubleday. At night to discuss affairs with President Duffy and West of Batten, Barton, Durstine and Osborne, and Lasdon dining in the famous Pillamente suite at the Waldorf.

June 27—By the Pennsy to Philly with Doug Black, Milton Runyon, Tom Burns and Julius Marks and visited with Ted Phillips, lunching at the Uptown Club. In the evening dining with Willard and Nellie Greenwald, his mother and Howard Behrman on the Starlight Roof. Then we played canasta and they won.

June 28—At many affairs working with the Dictaphone and with Harry Berk of Paul Warwick's agency, and also with Margaret Natwick and Louis Bauer at World Medical Ass'n. At four come Dr. Jacob Sarnoff to talk of a manuscript and complimented him on the gorgeous performance of his daughter, Dorothy, in "The King and I." At night with the Kiesewetters and Elmer Bobst to "21" and first cocktails with Michael Arlen, reminiscing of the "Green Hat" period. Later while dining merrily met Albert Lasker with John Gunther and his charming wife and Bill Murray of McKesson.

June 29—In the morning conferring with Kiesewetter on many projects. Later to talk with Lee and Conover of Selvage & Lee and with Mel Evans and Ralph Beebe, and then driving to Scarsdale with Milton Runyon and Laura where we dined handsomely with the Van Ripers; also come the Dick Finnegans, the Charles Corcorans and the Lasdons—and all heard breathlessly Dick Finnegan's story of how he wrote "The Pigeon and the Hawk."

June 30—Awake in the palatial estate of Milton Lasdon and Sylvia, named by old Pepys "Woods Corner." Played about with their kids, Randy and Lawrence. After dinner heard Jack Lasdon play the piano most proficiently and danced until late at the Old Oaks Country Club.

July 1—Lay late and breakfasted lavishly on 1000 calories. Then to see Mayes at Stamford and with Lionel Auster and Mrs. Schinazi to eat at the inn in Ridgefield on Alsatian and French cuisine. Then back to Stamford and driving to Harmon to catch the Century, reaching the station just as the train pulled in.

* * *

HEAVY WAIT

There's one in every waiting room,
One, maybe, out of four,
Who keeps his eye upon his watch
When not upon the door,

And opens up a magazine
And puts it down again,
And drums upon the chair arm, and
Asks "How much longer?" "When?"

There's one in every waiting room,
A fidgeter, a foamer,
A patient for whom "patient" is
A horrible misnomer.

—Richard Armour

ONE WHO NEEDS NO INTRODUCTION

Dr. X.,
A splendid surgeon,
At banquets speaks
Without much urgin'.

He takes the floor,
Alas, alack,
And some hours later
Gives it back.

He clears his throat,
He sips his water,
He soaks up laughter
Like a blotter.

His skin is thick,
So is his skull . . .
His knife is sharp,
His tongue is dull.

—Richard Armour

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The methylcellulose passes through the stomach and small intestine without digestive breakdown; mixes with the fecal residue in the colon, incorporating dry particles in its mass.

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The Medical Bookman

CLINICAL PEDIATRIC UROLOGY*

For practical purposes this appears to be a new book rather than a new edition of the author's "Pediatric Urology." It is well and profusely illustrated and contains many brief but informative case reports from the author's enormous experience, both clinical and pathologic. The large bibliography, much of it from the last few years, will commend it to those interested in the urologic literature; its detailed discussions will help the practitioner who deals with urologic problems in children; and its practical presentations of the technics of instrumentation and operations will make it indispensable to the resident in urology. Doctor Campbell has devised many instruments for use in children, and these are discussed and illustrated. The book is sound and conservative in its approach, if a trifle dogmatic in a few respects, but this seems to be characteristic of most textbooks, and is to some extent desirable. A man who does not advocate his own views rather warmly will probably not write a book. The importance of cooperation with and by the pediatrist is emphasized.

The first chapter is an example of the thoroughness which characterizes the whole book. It deals with "Methods of Examination and Diagnosis," and contains a hundred pages, 34 illustrations and a bibliography of three and one quarter pages. It discusses in detail the symptoms and physical findings which result from a wide variety of disorders of the urinary and male genital systems, as well as their causation. The value and applications of many laboratory procedures are reviewed. There is a thorough presentation of cystoscopy and other urologic instrumentation along with the indications, technic, and interpretation of urography, both excretory and retrograde. It will serve as a satisfactory manual of technic for the urologic resident.

Chapter two covers the varied aspects of the causes, effects, and treatment of obstructive uropathy. It is well illustrated, especially with reproductions of x-rays. There is considerable emphasis upon the histologic changes associated with obstruction and its complications. The sad fact that obstructive uropathy in children is rarely recognized by the average doctor until too late for really effective therapy is emphasized. Obviously there is room for much missionary work in this field to the end that general practitioners will recognize the potentially serious significance of pyuria and of disturbances of urination in the infant and child.

Chapter three covers embryology and anomalies in a thoroughgoing manner. It contains 194 pages, 133 illustrations and almost nine pages of references. All the anomalies which are of clinical importance are thoroughly reviewed, and those of greatest frequency are discussed at length. In this group are undescended testis, ureteral dilatation, both anatomic and functional, ureterocele, ectopic ureteral orifices, anomalies of the female external genitalia, hypospadias, epispadias, etc.

Infections and infestations of the urinary tract are covered in chapter four which consists of 144 pages, 44 figures and more than six pages of references. The predisposing and exciting causes as well as the bacteriology and pathology of pyogenic infections are considered in considerable detail. There are comprehensive discussions of the indications for and nature of the various forms of treatment, both surgical and medical. The pharmacology of the sulfonamides and of the antibiotics is reviewed, and schedules of dosage and descriptions of toxic reactions are presented. Reasons for selecting a certain antibiotic in a particular situation are given. The importance of a thorough urologic investigation without unreasonable delay in the presence of chronic and of recurring acute infections is stressed repeatedly, the point being the avoidance of unnecessary renal injury through procrastination. The apparently well established fact that aluminum gels administered with aureomycin to prevent gastrointestinal irritation will absorb the latter and inactivate it has been overlooked by the author. It is interesting to observe, along with the discussions of the most modern forms of therapy, Campbell's advocacy of "cleansing" of the

(Continued on page A-84)

*Clinical Pediatric Urology. By Meredith Campbell, M.D., Professor of Urology, New York University Post-Graduate Medical School. With a section on Nephritis and Allied Diseases in Infancy and Childhood by Elvira Goettsch, M.D. and John D. Lyttle, M.D. 1113 pages with 543 figures. 1951, Philadelphia and London, W. B. Saunders Company. Price $18.00.

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This new edition (rewritten and wholly revised) gives detailed directions for performing the laboratory tests and examinations of practical importance in clinical pathology, bacteriology, parasitology, histology, serology, biochemistry, mycology and virology. It is a completely reliable guide for physicians with their own laboratory facilities and for clinical pathologists, clinical laboratories, hospitals and laboratory technicians. A great amount of entirely new material has been added.

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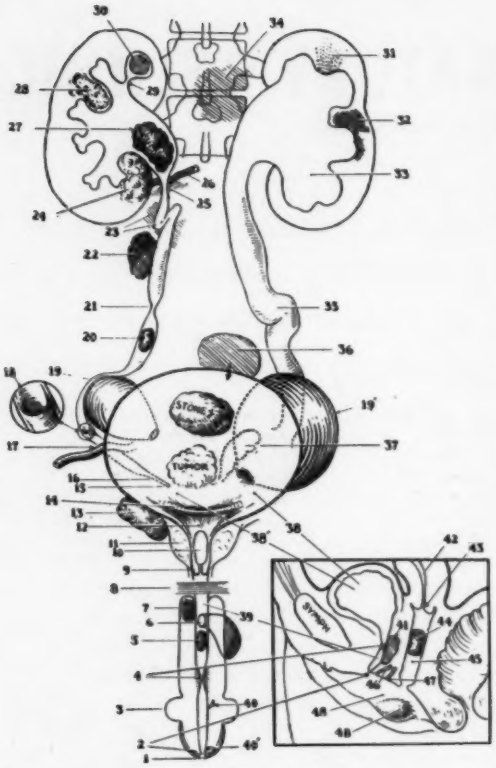

FIGURE 1. Direct and indirect causes of pyuria.

bowel by means of daily catharsis and enemas in the acutely ill child. One might be excused for suggesting that it is bad enough to be sick without having one's innards "cleansed" every day.

Tuberculosis of the kidneys is covered well, perhaps with too much emphasis upon the danger of toxic injury to the opposite kidney. The importance of urinary tuberculosis is brought out by the statement that 12 per cent of it occurs before the age of 20 years.

There are brief presentations of the infestations of the urinary tract which are rare in the United States. Included here are actinomycosis, echinococcal disease, lues and schistosomiasis.

Diseases of the male genitalia and of the female urethra are presented in chapter five. There are 101 pages, 38 illustrations and a large bibliography. Subjects discussed include genital tuberculosis, inflammatory diseases of the vulva, disorders of the endocrine functions of the gonads and the pituitary (the adrenals are considered in a separate chapter), and masturbation. The reviewer was startled to read of the frequency of prostatitis in boys and to find that it may cause enuresis.

Chapter six (39 pages and 19 illustrations) covers trauma to the urogenital system in a straightforward manner, and includes a review of the "crush syndrome" which the author is inclined to hold responsible for some cases of failure of the opposite kidney following injury to its mate. He uses the euphonious but debatable term "lower nephron nephrosis" in connection with crush injuries. The reviewer learned for the first time that renal injury is a well recognized complication of passage through the birth canal.

Chapter seven treats of calculous disease of the urinary tract (44 pages and 18 illustrations) from the points of view of incidence, etiology, pathogenesis and pathology, symptoms and treatment. Nearly everything that is said is equally applicable to adults. It is, like the rest of the book, well done.

THE rather depressing field of neoplasms of the urogenital system is discussed in chapter eight. One of the few bright spots is the observation that the prognosis of Wilms' tumors of the kidneys has improved rather strikingly in recent years. Surprisingly enough, neoplasms are the second commonest cause of death in the age group between 1 and 14 years. Most of the chapter is devoted to tumors of the kidney and surrounding tissues, and especially to Wilms' tumors. Other lesions encountered include growths of the ureter, bladder, prostate, urethra and testicle, all of them pretty uncommon. As in the other chapters, differential diagnosis is emphasized, and brief case reports are used freely.

Chapter nine discusses a lively topic which interests many physicians in widely scattered fields at the present time: the adrenal gland. There are 45 pages, 23 illustrations and three and one half pages of references. There is a systematic presentation of the present state of our knowledge of its anatomy, physiology, pathologic physiology, and symptomatology. The various functional disturbances and neoplasms are discussed at some length. When the material presented is compared with that available only a few years ago, it is plain that our knowledge of the adrenal is growing and being disseminated rapidly; it is equally evident that there is still much to learn, particularly in the way of correlating the clinical picture with the ketosteroid excretion and with the histologic appearance of the adrenal gland itself. This is especially evident in some cases of pseudohermaphroditism, in some of which clearcut evidence of what we regard as hyperadrenalism is present although the adrenals are, according to present standards, normal both grossly and microscopically.

Chapter 10 involves a group of complex disorders known as neuromuscular uropathy, a term which includes dysfunction of the ureter and blad-

(Continued on page A-86)

Hospital Staff Appointments of Physicians in New York City

by the Hospital Council of Greater New York. This is the report of a study made by a committee, appointed by the Hospital Council of Greater New York, to determine the various methods of appointing doctors to staff positions in New York hospitals.

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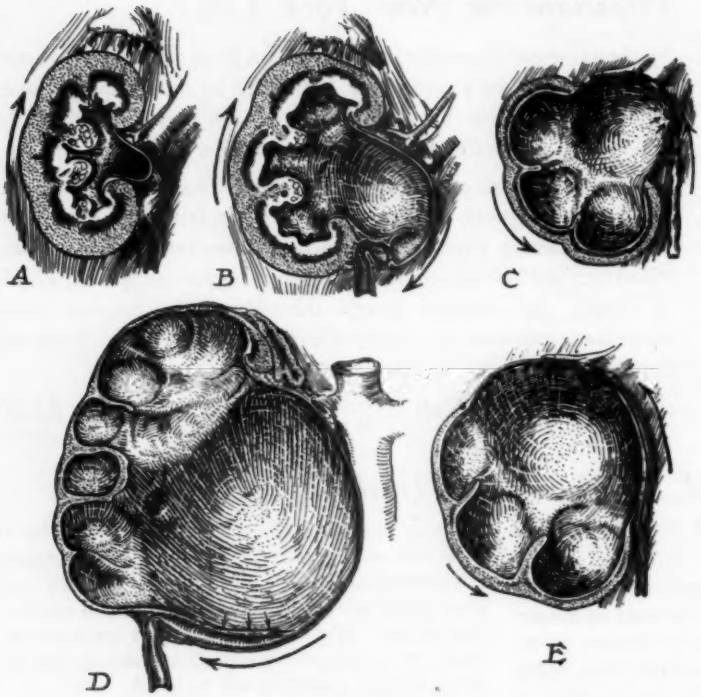

FIGURE 60. Development of hydronephrosis in a movable kidney. The periureteral fascia at the ureterovesical junction acts as a fulcrum to increase ureteral obstruction. Once begun, the process becomes a vicious cycle; the developing hydronephrosis causes increased renal sagging which, in turn, increases the obstruction. *A*, early clockwise rotation of kidney with beginning angulation of juxtapelvic ureter. *B*, increased obstruction with continued rotation. *C*, counterclockwise rotation and sagging of right kidney with elevation and often spur-valve formation at ureteropelvic junction. *D*, advanced clockwise rotation of right kidney with low spur-formation obstruction. *E*, same as *D*, but counterclockwise rotation.

der due to disorders of the nervous system, and certain disturbances of motility in the renal pelves, ureters and bladder probably due to inherently defective structure. Whether the latter involve primarily the nervous or the smooth muscular tissues of the urinary tract is not known. There are rather full discussions of the anatomy, physiology, pharmacology, and neuromuscular disorders of the collecting portions of the urinary tract. Transurethral resection is recommended when incomplete emptying of the bladder is the chief problem, unless the child can be trained to empty the organ by urinating in stages, by manual compression, and by the use of drugs which stimulate the parasympathetic nerves, their endings or the detrusor itself. Plastic operations on the vesical outlet may relieve true incontinence if some vesical sensation is present. Antispasmodic drugs are not often of assistance in relieving true incontinence. Cystostomy is often the only practicable solution for severe incontinence or urinary retention when innervation is lacking or when muscular atony is hopelessly advanced. The author believes that almost every case of congenital megaloureter or ureterectasis is associated with some impairment of the patient's ability to empty the bladder; he suggests that transurethral resection is often necessary in these cases.

Enuresis is the subject of chapter 11. It is the author's view that uncomplicated nocturnal enuresis, not associated with any disturbance of the diurnal function of the bladder, is practically always due either to inadequate training or to some mental conflict. Laziness may be a factor. Pure nocturnal enuresis should not be regarded as a serious problem unless it persists beyond the age of four, at which time an energetic attempt should be made to overcome it by training both the mother and the child. If this fails, organic disease should be excluded by neurologic examination and by cystoscopy. If nothing abnormal is found, psychiatric aid should be sought. When, on the other hand, urination is disturbed by day as well as by night, cystourethroscopy should be the first step in the investigation.

The author rejects the view that any child wets the bed solely because he is a heavy sleeper, but concedes that a Cunningham clamp or Campbell's modification of it may help the child who really wants to overcome his handicap by establishing a habit of getting up rather than wetting the bed.

CHAPTER 12 is entitled "Urologic Surgery" but deals with details of pre- and postoperative care of the infant and child. It goes into the questions of electrolytes, nutrition, fluid balance, transfusion, etc. There is an excellent section on the nursing care of the young urologic patient by a nurse (Miss Goddard). It is full of practical points in the actual

(Continued on page A-88)

"almost time heals all wounds"

But consider *resistant* wounds or lesions which linger despite the usually adequate measures:

indolent ulcers
malodorous fistulas
infected burns
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Chloresium therapy

gives time and the physician a helpful adjunct in these cases.

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Moss, Henry N.; Morrow, Burton A.; Long, Richard C.; Ravdin, I. S.: Effectiveness of Chloresium in Wound Healing and Deodorant Effects, J.A.M.A., *140*:1336 (Aug. 27) 1949.
Carpenter, Earnest B.: Clinical Experiences with Chlorophyll Preparations, Amer. J. Surg., 77:167, 1949.
Langley, Wilfred D., Morgan, Winfield S.: Chlorophyll in the Treatment of Dermatoses, Penn. Med. J., *51*:44, 1947.
Morgan, Winfield S.: Chlorophyll Therapy, Guthrie Clinic Bulletin, *16*:94, 1947.
Boehme, Earl J.: The Treatment of Chronic Leg Ulcers, Lahey Clinic Bulletin, *4*:242, 1946.

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FIGURE 178. Congenital valves of the posterior urethra; various types and methods of treatment. Type I: Moderate dilatation of the urethra behind valves. 2, 3, author's cutting method of valve resection; 4, Type I and II valves. Small verumontanum. Greatly overdistended posterior urethra. 5, 6, Type I valves, also valve leaflets passing from the midverumontanum to the lateral walls. These leaflets caused an hourglass appearance in the posterior urethrogram; 7, reduplicated Type I valves. 8, multiple Type II valves in an eleven-month-old boy, and 9, loop resection in 8.

nursing care of patients and is extremely valuable.

There is also a rather full discussion of anesthesia. Dr. Campbell wisely emphasizes the fact that, no matter how skilfully the operation itself is performed, it will avail little or nothing if the sick child is not properly prepared beforehand, correctly anesthetized, and well handled afterward. Lacking any of these, the patient may well die of the most expertly conducted operation. The importance of a correct and complete preoperative diagnosis is stressed: i.e, one does not operate upon one kidney until he is fully informed, at least by urography and often by retrograde pyelogram, of the state of the opposite kidney. The choice of the proper time for an elective operation in relation to the age, season of the year, etc. is also considered.

CHAPTER 13, devoted to operative technic, is a small manual of operative urology in the infant and child. One hundred and eighteen pages and 98 illustrations make it quite complete. All of the operations likely to be performed are discussed, many of them in great detail. The author is quite evidently fascinated by the plastic operations for hypo- and epispadias, judging by the completeness of his descriptions of the various technics available.

One can hardly help wondering about the desirability of using number one catgut for the closure of abdominal wounds in small fry when smaller sizes are readily available. The author contradicts himself mildly when he says in one part of this chapter that ureterectomy is often necessary in urinary tuberculosis, only to recommend later on that the tuberculous ureteral stump be left alone. There are a few rather dogmatic statements that require more proof before they can be accepted by the informed reader. In this category is the flat statement that an ureteral splint is essential after a plastic operation upon the ureteropelvic junction. While widely held, this view has never been proved, and is contrary to your reviewer's experience. If it were correct, all of the standard methods of ureterosigmoidostomy except the "Coffey Two" would fail; yet that technic (requiring inlying ureteral catheters) is rarely recommended today. Neither has it been my experience that the urethra always has to be dilated after urethroplasty for hypospadias, but that it is the exception rather than the rule. The author falls into the error, so common among urologists who take their pens in hand, of believing that "balanitic" is an adjective referring to the glans penis. There is no such word in the dictionary. These are indeed trifling matters, but it is frustrating to review a

(Continued on page A-90)

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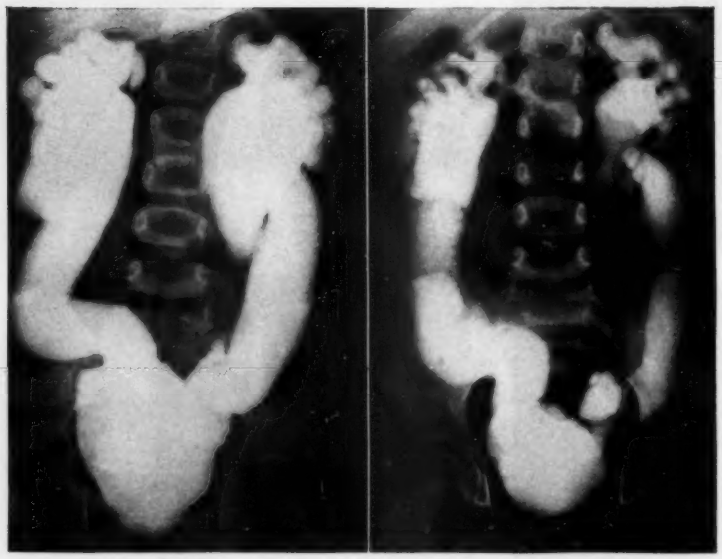

A B

FIGURE 185. Congenital contracture of the vesical orifice in a five year old girl examined because of mild pyuria. No urinary difficulty. There is enormous dilatation of the upper urinary tract; the kidneys were reduced to thin shells. Suprapubic cystostomy drainage was instituted and six months later was followed by transurethral resection of the vesical outlet. *B*, cystogram six months postoperative indicates considerable diminution of the dilatation in both ureters and renal pelves. Marked improvement in the renal function and general condition of the child followed. The preoperative residuum determined immediately after voiding was five ounces, while postoperative the child emptied her bladder completely. Yet after five minutes, a considerable amount of urine drains into the bladder to confuse the determination of residual urine hence the importance of catheterization immediately following urination.

(Illustrations from: Clinical Pediatric Urology)

book of this size wtihout taking triumphant exception to anything. The urologic resident and even the veteran urologist will find many useful details concerning operative technic in these pages.

In chapter 14, Goettsch and Lyttle review concisely (66 pages) those disorders of the kidneys with which the urologist to be worth his salt must be familiar, although he is rarely called upon to treat them. Included are the various forms of nephritis, lipoid nephrosis, chronic pyelonephritis, hypertension, renal hyperparathyroidism (renal rickets), nephrocalcinosis, and lower nephron nephrosis (which is not a respectable term in these parts). This chapter will permit the reader to brush up his knowledge of these subjects rather quickly and effectively.

To summarize, this is an excellent and comprehensive manual, textbook, and work of reference for the urologist, the pediatrist, and for others interested in urology in children.

C. D. C.

► THE NEUROSURGICAL TREATMENT OF TRAUMATIC PARAPLEGIA - - -

By J. Lawrence Pool, M.D., Professor of Neurological Surgery, College of Physicians and Surgeons, Columbia University, New York City. 107 pages, illustrated. 1951, Charles C Thomas, Springfield, Illinois. $3.00.

One of a series in the American Lectures of Surgery, this small monograph covers primarily the treatment of the acute phases of traumatic cord injuries. The contents of this book consist of a routine survey of this phase of spinal cord injuries; nothing new or original is included. However, this work does make available a brief, clear and well-organized review of this subject. The emphasis throughout is on the acute and subacute phases of spinal cord injuries.

The last chapter, consisting of eight pages, briefly mentions the very important phases of the chronic care of these patients as regards their complications and their rehabilitation. Since this small volume deals primarily with the neurosurgical treatment, the brief summary of the complications and rehabilitation is probably justifiable even though the elaboration of this material might have added considerably to the value of the monograph.

A. B. B.

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► THE BRIDGE OF LIFE - - -

By Augusto Pi Suner, M.D., Director, Institute of Experimental Medicine, University of Venezuela, Caracas. 270 pages. 1951, The Macmillan Company, New York. $3.75.

► MAN IS A MICROCOSM - - -

J. A. V. Butler, D.Sc., Head of the Department of Biophysical Chemistry, Chester Beatty Research Hospital, London. 162 pages. 1951, The Macmillan Company, New York. $3.00.

Dr. Butler and Dr. Suner present in these two books a summary of accepted theories and known facts on the origin and development of life. Although both authors cover a great deal of the same subject matter, the books complement and supplement each other, particularly in that Dr. Suner has expanded on many phases of the general subject and has devoted more space to philosophic discussions. For, as he writes in the first chapter, "Biology, or the science of life, begins with the study of physics and ends in metaphysics."

Both authors emphasize that while modern science has been able to produce a type of thinking mechanism by the application of mathematical and physical principles, there has been no true duplication of the complexity of human thought and action.

Starting with chapters directed to cellular structure and the evolution of the cell into bodily structures, the authors go on to discussions on theories of the origin of life, on heredity, functioning of the body, and the inter-relation between physical function and mental processes.

Written in as simple language as is compatible with their subjects, Drs. Suner and Butler present interesting as well as informative introductions to a clearer concept of man's own origin and development and of his relation to himself as a sentient organism and to the society in which he lives.

S. S. C.

► ETERNAL EVE; THE HISTORY OF GYNECOLOGY AND OBSTETRICS - - -

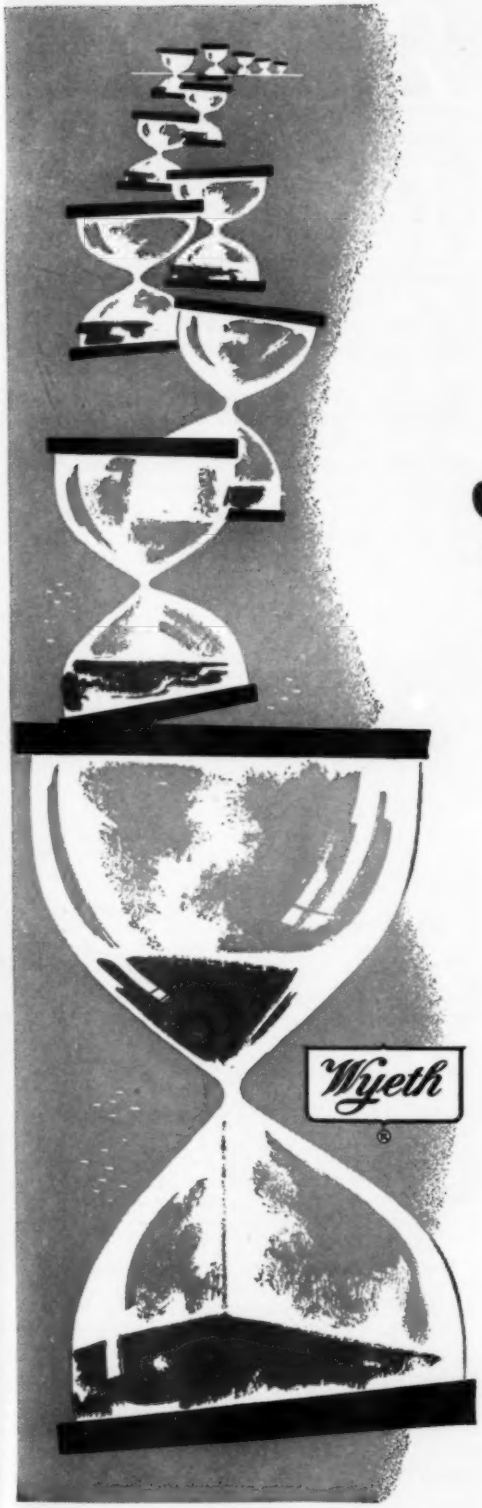
By Harvey Graham, M.D. 699 pages, illustrated. 1951, Doubleday & Company, Inc., Garden City, N.Y. $10.00.

The history of any phase of science having a direct bearing on man is essentially rich in social and cultural involvements. This is particularly true of obstetrics and gynecology, since human beings have to be born and the process of birth is doomed to be not only painful but fraught as well with danger to both mother and infant. Moreover the functions of the female organs were in the past invariably embedded in magic, sanctity and mystery, which therefore chained them to ritual and superstition or emotionalism. Hence beliefs concerning these matters are deeply rooted in history and culture, a fact which the author of this volume richly explores and exploits to the reader's great pleasure and enlightenment.

Dr. Graham makes the subject of his present study man's attempt to master the process of birth from primitive to modern times, and emerges with a fascinating volume, full of vibrating historical anecdotes and replete with rich and accurate recordings of the intimate evolution of a great and fruitful science, outlined against the background of society and its pulse.

This vast and scholarly panorama of the lore of birth and midwifery begins with Dr. Graham's portrayal of the obstetric folklore, practices and beliefs prevailing in antiquity, especially in Egypt and Israel. Because of the relative wealth of available material he devotes special chapters to Greece and Rome, and to the two men they shared, namely Soranus and Galen. While the former comes in for his well deserved tribute, one feels that Galen's true greatness is somewhat blurred by the modern superstition which tends to belittle him. The topics of Byzantine Midwifery and Medieval Twilight and later Rebirth are exhaustively treated. Having thus cleared away these backgrounds, Dr. Graham launches in earnest upon his lively, manysided and absorbingly written accounts of the slow but ever-expanding growth of scientific midwifery. In the four hundred odd pages which follow we see it evolve from the first cesarean operation in the

(Continued on page A-94)



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1. Bain, W. A., Broadbent, J. L., and Warin, R. P.: Lancet 2:47, 1949.

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year 1500, performed by courageous Jacob Nufer, the Swiss sow-gelder, an operation in which both infant and mother survived, to the publication in 1540 of the Byrth of Mankynde, the first midwifery book printed in English, and on to ever greater, more sophisticated achievements, leading up to modern conditions which, in the contemporary democracies at least, are sheer paradise in safety, health, analgesia and well-being.

We find here engrossing accounts of the genius of Ambroise Paré, the story of the Chamberlen secret obstetric forceps, famous witch trials involving midwifery, illegitimacy and other irregularities, Harvey's great contributions and his "wise humanity," the coming of man-midwives and the growth of obstetric knowledge and skill which unfortunately even in this limited phase did not come into their own until the early part of the eighteenth century with William Hunter versus Dr. Slop. The stories of ever-present quackery make entertaining reading but the author's accounts of the conquest of the Puerperal Pestilence beginning with the efforts of such men as Charles White, Alexander Gordon, Oliver Wendell Holmes, and ending with Semmelweis and his followers in many lands, are exceptionally well told.

The story then continues with modern gynecologic surgery and ovariotomy, the work of McDowell, Sims and many others, and gathers momentum in the final chapters, Pain Ends, Gynecology Made Safe, Midwifery Made Safer, X-rays and Radium, concluding with a brief survey of recent developments

It is a vast work, indispensable to any physician regardless of his past neglect of the history of his trade. It is of interest to the student of science and culture because it reveals man's struggle for knowledge and its application in a field so close to his well-being, so vital to his survival. The amazing thing is that he took so long in its mastery and cherished so many delusions and evils before he allowed science and wisdom to guide him.

M. G.

Books received will be acknowledged in this department each month. As space permits, books of principal interest to our readers will be reviewed more extensively.

Gynecologic Cancer. By James A. Corscaden, Ph.B., M.D., Professor Emeritus of Clinical Gynecology, College of Physicians and Surgeons, Columbia University; Attending Gynecologist, Sloane Hospital for Women, New York. 368 pages, illustrated. 1951, Thomas Nelson & Sons, New York, Edinburgh & Toronto. $6.00.

Hope and Help for the Alcoholic. By Harold W. Lovell, M.D. 215 pages. 1951, Doubleday & Company, Inc., Garden City, New York. $2.75.

Visceral Radiology. By Emerik Markovits, M.D., Formerly Scientific Collaborator of the Central Radiologic Institute of the General Hospital (Holzknecht-Institute), Vienna; Head of the Radiologic Department of Elizabeth Hospital of the City of Budapest; Post-graduate Lecturer at the Central Radiologic Institute of the University of Budapest; Radiologist of the Steiner Cancer Clinic, Atlanta, Georgia. 612 pages, with 682 figures. 1951, The Macmillan Company, New York. $24.00.

The Physiology of the Newborn Infant. By Clement A. Smith, M.D., Associate Professor of Pediatrics, Boston Lying-In Hospital, Harvard Medical School, Boston. Ed. 2. 348 pages, illustrated. 1951, Charles C Thomas, Springfield, Illinois. $7.50.

Poisons; Their Isolation and Identification. By Frank Bamford, B.Sc., Late Director of the Medico-Legal Laboratory, Cairo. Ed. 2, revised by C. P. Stewart, D.Sc., Ph.D., Reader in Clinical Chemistry, University of Edinburgh; Senior Biochemist, Royal Infirmary, Edinburgh. With a foreword by Sir Sydney Smith, C.B.E., M.D., F.R.C.P., Regius Professor of Forensic Medicine, University of Edinburgh. 316 pages with 23 illustrations. 1951, The Blakiston Company, Philadelphia, New York & Toronto. $5.50.

The Anatomy of Happiness. By Martin Gumpert, M.D. 310 pages. 1951, McGraw-Hill Book Co., Inc., New York, London & Toronto. $3.50.

Diseases of the Endocrine Glands. By Louis J. Soffer, M.D., F.A.C.P., Associate Attending Physician and Head of the Endocrine Research Laboratory and Clinic, The Mount Sinai Hospital, New York City; Assistant Clinical Professor of Medicine, Columbia University. 1142 pages with 88 illustrations and 3 plates in color. 1951, Lea & Febiger, Philadelphia. $15.00.

Therapy of Dermatologic Disorders; Including a Guide to Diagnosis and a Dermatologic Pharmacopeia. By Samuel M. Peck, B.S., M.D., Dermatologist to the Mount Sinai Hospital; Associate Clinical Professor of Dermatology, Columbia University; and George Klein, M.D., Associate Visiting Dermatologist, Morrisania City Hospital; Assistant Clinical Professor of Dermatology, New York Medical College, New York City. 383 pages with 4 illustrations. 1951, Lea & Febiger, Philadelphia. $6.50.

Collected Papers of the Mayo Clinic and the Mayo Foundation. Volume XLII—1950. Edited by: Richard M. Hewitt, B.A., M.A., M.D., A. B. Nevling, M.D., John R. Miner, B.A., Sc.D., James R. Eckman, A.B., M.A., Ph.D., M. Katharine Smith, B.A., Carl M. Gambill, A.B., M.D., M.P.H., and Florence Schmidt, B.S.E. 812 pages with 130 figures. 1951, W. B. Saunders Company, Philadelphia & London. $11.50.

Physical Diagnosis. By Raymond W. Brust, A.B., M.D., F.A.C.P., Associate in Medicine, University of Pennsylvania Medical School. Introduction by Truman G. Schnabel, A.B., M.D., F.A.C.P. 294 pages, illustrated. 1951, Appleton-Century-Crofts, Inc., New York. $4.50.

Nutrition Fronts in Public Health; Proceedings of the Nutrition Symposium held at Yale University, November 10, 1950. By Icie G. Macy, Benjamin H. Ershoff, Clive M. McCay, Ernst Simonson, Howard A. Schneider and Leo T. Samuels. 168 pages. 1951, The National Vitamin Foundation, Inc., New York. $1.50.

Multiple Sclerosis; Application of Rehabilitation Techniques. By Edward E. Gordon, M.D., Department of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, New York. 1951, National Multiple Sclerosis Society, New York.